

San Francisco Law Library

No.

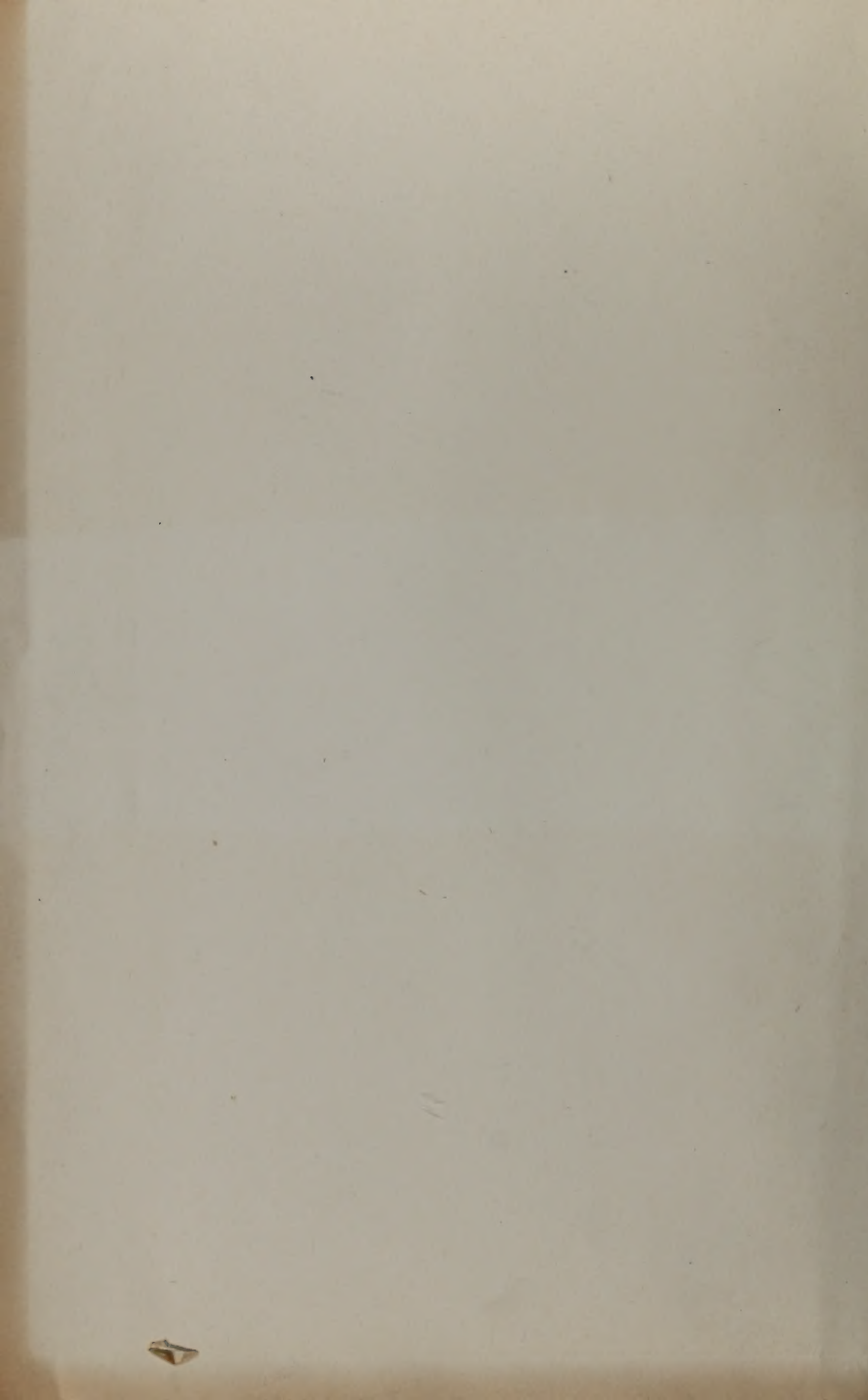
Presented by

.....

EXTRACT FROM BY-LAWS.

Section 9. No book shall, at any time, be taken from the Library Room to any other place than to some court room of a Court of Record, State or Federal, in the City of San Francisco, or to the Chambers of a Judge of such Court of Record, and then only upon the accountable receipt of some person entitled to the use of the Library. Every such book so taken from the Library, shall be returned on the same day, and in default of such return the party taking the same shall be suspended from all use and privileges of the Library until the return of the book or full compensation is made therefor to the satisfaction of the Trustees.

Sec. 11. No books shall have the leaves folded down, or be marked, dog-eared, or otherwise soiled, defaced or injured. A party violating this provision, shall be liable to pay a sum not exceeding the value of the book, or to replace the volume by a new one, at the discretion of the Trustees or Executive Committee, and shall be liable to be suspended from all use of the Library till any order of the Trustees or Executive Committee in the premises shall be fully complied with to the satisfaction of such Trustees or Executive Committee.



Dear Mr Osborn

Please do not
run this record as you might
give the exhibits
NHS

6 a
839
835
2311

IN THE
United States Circuit Court of Appeals
FOR THE NINTH CIRCUIT.

ALASKA TREADWELL GOLD MINING COMPANY,
a Corporation;

ALASKA UNITED GOLD MINING COMPANY, a Cor-
poration;

ALASKA MEXICAN GOLD MINING COMPANY, a Cor-
poration; and

ROBERT A. KINZIE,

Appellants,

vs.

ALASKA GASTINEAU MINING COMPANY, a Corpo-
ration,

Appellee.

REPLY BRIEF OF APPELLANTS.

HELLENTHAL & HELLENTHAL,

Attorneys for Appellants.

CURTIS H. LINDLEY,

Of Counsel.

Filed this _____ day of October, A. D. 1913.

Clerk.

By _____, Deputy Clerk.

THE JAMES H. BARRY CO.
FILED

OCT 23 1913

Records of M. S. C. A. Unit
at a/pt
209

IN THE
United States Circuit Court of Appeals
FOR THE NINTH CIRCUIT

ALASKA TREADWELL GOLD MINING COM-
PANY, a Corporation;

ALASKA UNITED GOLD MINING COM-
PANY, a Corporation;

ALASKA MEXICAN GOLD MINING COM-
PANY, a Corporation; and

ROBERT A. KINZIE,

Appellants,

vs.

ALASKA GASTINEAU MINING COMPANY,
a Corporation,

Appellee.

REPLY BRIEF OF APPELLANTS.

In view of the fact that the statement of facts of appellee's counsel, as well as the introductory remarks contained in the brief, contain many statements that are misleading, and so worded that if left unexplained, they would leave a wrong impression concerning the

real facts in the case, it becomes necessary to refer to at least some of these statements.

At the outset on page 1 of the brief the statement is made that Mr. Bradley entered into a contract, referring to the contract of October, 1909, with the predecessor in interest to the appellee, and that the object and purpose of this contract was that of adding value to the Sheep Creek mines. That this was the object of the contract as far as the predecessor of the appellee is concerned, cannot be doubted, but the object of Mr. Bradley, on the other hand, was that of procuring power for use in connection with the operation of the Treadwell mines, owned by the appellant companies. Attention is called to the purpose Mr. Bradley had in view, for the reason that it is important in connection with subsequent discussion.

On page 2 it is stated that while this contract was of record, one Jackling, whom it is stated is a mining engineer of wide experience, was attracted to the property and planned an expenditure of \$4,500,000 upon it. Counsel then proceed to say that the Sheep Creek mines and the contract in question were purchased by Mr. Jackling in reliance upon the fact that the appellants would keep the contract, to which is added the statement that in the community in question there was no other available power nor were there other producers from whom power could be obtained.

It would appear from this statement, as it occurs

on page 2, that Mr. Jackling, a mining engineer of wide experience, arranged to expend \$4,500,000 to develop a mine so that in two and one-half years 6,000 tons of ore per day would be mined and milled. It must be understood that such a mill would be somewhat larger than all the Treadwell mills combined. Yet this is the capacity that appellee's mill is to have, according to the statement of counsel on page 2 of the brief. And it is asserted that this engineer of wide experience entered upon this undertaking by purchasing a contract by which he would be entitled to receive a current of not to exceed 300 horse power, with no other available power, at a place where there were no other producers from whom power could be obtained.

That such a plant would require several thousand horse power in connection with its operation, goes without saying, and it follows that the statement that Mr. Jackling relied upon this current of not to exceed 300 horse power to operate this immense plant is entirely erroneous and without any foundation in fact.

Then follows the statement on page 3 that after the appellee had once started to work, appellants placed a construction upon the contract of October, 1909, which would have resulted in delaying the program of the appellee almost indefinitely, and that since Christmas, 1912, the appellee was completely deprived of all power under the contract.

Now, the fact is that the appellants placed upon the contract in question the only construction of which that contract admits, as we have already shown in our brief, and hope to further demonstrate here. The statement that the effect of that construction would in any wise interfere with the operations of the appellee is as erroneous as the statement that Mr. Jackling expected to operate a 6,000 ton milling plant with 300 horse power.

The question of whether the appellee shall be entitled to sufficient current to enable it to develop 300 horse power by whatever machinery it may see fit to install, at whatever place it may desire to install it, or shall be entitled to a current from which it can develop 300 mechanical horse power if adequate machinery is installed, and such machinery is operated with a reasonable degree of skill, can in no wise affect the operations of the appellee, except that in the latter case it will be required to go to the additional expense of installing adequate machinery and employing men possessed of a reasonable degree of skill to operate it, for if this is done, the current furnished by appellants will yield the appellee 300 horse power, and that is all it is entitled to in any event. Nor can the appellee's operations be affected by the question of whether or not they shall be entitled to starting surges or starting currents, except that if the court should hold that they are not entitled—under the contract—to starting

surges or currents, they will be obliged in order to utilize the full 300 horse power, to either remove their load when the motor is started, employ smaller motors so that one at a time can be started, or supply the larger motor with suitable starting devices so that it can be started under full load conditions without requiring additional current. Surely, the operations of the appellee would not be indefinitely delayed if it were required to supply these motors with starting devices which, as we will endeavor later on to show, are entirely practical and are in general use. With the appellee it is not a question of whether it will be deprived of power, but whether it will become necessary for it to use efficient machinery operated with reasonable skill in order to develop from the current that is furnished the 300 horse power to which it is entitled, or whether it will be permitted to use the wasteful, slothful methods now employed at the expense of the appellants.

Counsel then proceeds to state that the matter in dispute is so trifling that it should have been settled out of court. That the matter in dispute is trifling to appellees is quite true, for the construction placed upon the contract by the trial Court and for which the appellee contends gives it no advantage whatsoever, except that it is enabled to use cheap and inefficient machinery, carelessly operated, without any loss to itself, while it would be required, if the

construction contended for by appellees were adopted, to employ efficient machinery, keep it in good repair and operate it with a reasonable degree of skill in order that it might be able to develop 300 horse power from the current furnished it under the contract. The saving that would thus result to the appellee from the use of inefficient machinery and slipshod method of operation, is the only advantage that could fall to it as a result of the lower Court's decree.

In the case of the appellants, however, the situation is very different. To them the affirmance of the decree of the lower Court sustaining the contention of the appellee means the loss of their entire Sheep Creek investment for all practical purposes, for if the appellee is to have the right first of all to distort the current generated in the Sheep Creek plant and thereby waste its efficiency without restriction either by using motors that would bring about that result, or by using long transmission wires or other apparatus having like effect, the Sheep Creek generating plant loses its value to the appellants not only because the appellee may take the entire current generated, but even if it does not take the entire current, the appellants are in no position to know when it will require the entire current so that they cannot depend upon the Sheep Creek plant for power in connection with their operations, but are obliged to make other provisions so that if at any time the appellee shall require

all the current generated, they will not have to shut down their mines for lack of power. And again, that portion of the decree which directs the appellants to furnish starting currents whenever required is equally ruinous to appellants for while these currents may not be drawn with great frequency and may be of short duration, the appellants must always hold in reserve sufficient current to meet these momentary demands whenever made, for they have no way of knowing in advance when these excessive demands will be made, and must, therefore, be in readiness at all times to meet them. This makes it necessary to keep in reserve a current approximately five times as large as the running current of the appellee's motor, that is to say a current of approximately 1500 horse power, assuming the running current to be 300 horse power, which current appellants must permit idly to circulate in the circuit where it is of no benefit to anyone except at short intervals when the appellee starts his motor, and all this in order to save the appellee from the necessity of supplying itself with ordinary starting devices or the necessity of removing its load at the time of starting. If the appellee were permitted to draw sufficient current to enable it to develop 300 horse power with the motor which it is now operating at a power factor of approximately 60 per cent. so that it requires a current in excess of 500 horse power to

develop 300 mechanical horse power, the appellants would be deprived of any use of the Sheep Creek plant even though there should be water enough in Sheep Creek to operate the plant to capacity, for if the starting current of the motor is five times as great as its running current, a motor that would require a current of 500 horse power to generate 300 mechanical horse power would require a starting current of five times 500, or 2500 horse power, whereas the total capacity of the Sheep Creek plant is only 2600 horse power.

If this decree and the construction contended for by the appellee is sustained, the appellants would, therefore, have to permit all the current that can be generated at the Sheep Creek plant to circulate idly in the circuit and remain there in order that it might be there to meet such occasional demands as the appellee might make for it to start its machinery. Surely the matters involved in this litigation are not trifling as far as appellants are concerned, however slight the advantage that the appellee can gain from a decision one way or the other.

We now come to the counsel of the appellee's statement of the case commencing on page 4 of their brief. This statement refers in a large part to matters that are wholly immaterial, and we refer to it only in order that the Court may not receive an erroneous impression regarding the conduct and attitude of the

appellants in connection with the subject matter before the Court. The statement contains many inaccuracies. Some of these we will endeavor to correct.

At the outset of the statement it is said that the appellee's predecessor was at the time of the execution of the contract in possession of the Sheep Creek mines and the Sheep Creek water right, and that 260 actual horse power were required to operate the Sheep Creek mine. The matter of the power requirements of the Sheep Creek mines has already been discussed in our original brief on file at page 157 *et seq.*, where it was shown that 150 horse power was all that the mines actually required. Mr. Bradley testified in detail as to just what the power requirements of the Sheep Creek mine at that time having 30 stamps would be (See evidence Bradley, Record, page 670), and in this he is corroborated by Mr. Kinzie and others. Nor is there any substantial dispute upon this question. Mr. Thane, the general manager of the appellee, issued a prospectus, which is in the record, in which it was estimated that 300 electric horse power referred to in the contract of October, 1909, was sufficient to operate the 100 stamp mill at the Perseverance and drive the Sheep Creek tunnel besides. Surely, if 300 horse power can do all this, 150 horse power would be amply sufficient to operate the Sheep Creek mine, having but 30 light stamps (See Prospectus, Record, page 718; also Deposition Bradley, p. 672). But the

conclusion of the Court and counsel that 260 actual horse power was necessary to operate the Sheep Creek mines is not based upon the actual power requirements of the mines, but upon the power requirements of the various pieces of machinery situated in and about the mine at the time, which included compressors and other apparatus transferred and conveyed to the appellants under and by virtue of this particular contract, the contract of October, 1909. Mr. Bradley testified that much of this machinery was unnecessary to the successful operation of the mines (see evidence Bradley, Record, page 670) and surely the other parties must have taken the same view of the situation, for had they not done so, they would not have transferred their compressor and other apparatus, and by so doing rob the mine of necessary appliances. In any event, it could not have been the intention of the parties to reserve a current for the purpose of operating these machines, for the machines themselves were transferred to the appellants, one of them, a compressor, as stated by counsel for appellee in their brief on page 5, being now in use by the Alaska Juneau Company at the Gold Creek tunnel. Clearly, this compressor and the other apparatus conveyed to appellants was useless and unnecessary in connection with the operation of the Sheep Creek mines, and did not and cannot enter into any calculation of the power requirements of these mines, which in no event exceeded

150 horse power as was clearly shown and is as stated by Mr. Bradley in his letter to Mr. Endicott.

On page 6 of the appellee's brief occurs a statement that at the time the contract was made, the appellee also had other mines beside the Sheep Creek mines, and this is followed by the statement that Mr. Bradley represented to the attorney for the appellee that he was desirous of securing control of the Sheep Creek water power and would in consideration therefor furnish the appellee's predecessor with sufficient power to operate its mine from a power plant to be constructed by Mr. Bradley.

This statement is altogether erroneous, if considered as a whole. There is nothing in the record or in the findings to show that Mr. Bradley ever made the statement that he would furnish or reserve sufficient power to the predecessor of the appellee to operate its mines. The statement of Mr. Bradley was to the effect that all the power the Sheep Creek mines had ever required in the past or would require in the future was 150 horse power, and that he would furnish a current of not to exceed 200 horse power in order to supply the appellee's predecessor with ample power to operate the Sheep Creek mine.

(See letter of Bradley to Endicott, Record, page 652.)

(See evidence Shackelford, Record, page 103.)

(See evidence Bradley, Record, page 652.)

At no time was it contemplated by anyone in con-

nection with the execution of the contract that power was to be reserved to operate any mines other than the Sheep Creek mines.

Counsel then proceed to state on page 6 of the brief that Mr. Bradley made the statement to Mr. Shackelford, the attorney for the appellee's predecessor, that the Sheep Creek power plant had a producing capacity of 150 horse power, but that 200 horse power would be ample with which to operate the Sheep Creek mines and would make "good measure." Now, the statement of Mr. Bradley was to the effect that 150 horse power was all that the Sheep Creek mines would require, and was ample to operate these mines, and that 200 horse power would make good measure.

(See evidence Shackelford, Record, page 103.)
(See letter Bradley to Endicott, Record, page 652.)

Counsel then proceeds to state that Mr. Bradley was misinformed upon this subject, since the water power plant had a capacity of 380 horse power and that the power requirements of the mine were 260 horse power. Mr. Bradley, however, testified that he did not take into consideration the capacity of the water power plant nor the power requirements of the various pieces of machinery on the ground, but that he estimated the amount of power necessary to the operation of a mine at 150 horse power, that being the amount of power that would be necessary to operate

30 stamps if properly operated, and that he made an allowance of 50 horse power to take care of such things as power factor losses and other matters of that kind.

(See evidence Bradley, Record, page 668.)

Counsel then state that a draft of an agreement was drawn by Mr. Bradley and Mr. Shackleford, which was identical with the agreement of October, 1909, with the exception that the word 200 electric horse power appeared wherever 300 electric horse power appeared in that agreement. It is then stated that this agreement, together with a letter from Mr. Bradley to Mr. Endicott, set out at length in the brief, was presented to Mr. Endicott, and that thereupon a consultation was had with Mr. B. L. Thane, who, it will be observed, is the general manager for the appellee, in regard to the power needed for the operation of the Sheep Creek mines exclusive of any starting surges.

The record shows that such consultation was had with Thane, but it also shows that the matter of starting surges was never mentioned.

(See evidence Shackleford, Record, page 111.)

(See finding of the Court, Record, page 1059.)

Counsel then state that it was determined by the Boston owners that they would need 300 horse power instead of 200. The record shows that Mr. Thane advised the Boston owners of the fact that 300 horse

power would be required, and in this connection it must be remembered that Mr. Thane was acting as an expert in the employ of the appellee's predecessor, and was consulted by the appellee's predecessor with a view to determining just what would be required. The parties were dealing at arm's length. The appellee's predecessor did not rely upon anything that Mr. Bradley said, either by letter or otherwise, but consulted their own engineer and acted upon his advice, and upon being advised that 300 horse power would be required to operate the Sheep Creek mines instead of 200, Mr. Endicott wired Mr. Bradley that the contract would be executed if 300 were substituted wherever 200 appeared, and in this Mr. Bradley assented by wire. This led to the execution of the contract between the parties. The contract of October, 1909, was then set up at length in the brief presented by appellee's counsel. After setting up the contract at length, the following statement taken from the Court's findings occurs on page 13 of the brief:

"From the surrounding circumstances and from the face of the contract, it was the intention of the appellants to provide, and for the predecessor in interest of the appellee to receive, the beneficial and uninterrupted use of 300 actual horse power, including such starting surges and other conditions as would reasonably insure to the Oxford Mining Company, and its successors, the right to use 300 actual horse power, in connection with the ordinary machinery used in mining, and the ordinary forms

of induction motors in common use in mining on loads of 300 horse power or less."

This quotation is not accurate. The actual language of the Court was that it found from the surrounding circumstances that it was the intention of the parties, and so forth. The finding of the Court does not state that it is found from the surrounding circumstances and from the face of the contract. The phrase "from the face of the contract" does not occur in the Court findings. The Court simply finds from the surrounding circumstances independent of the contract that it was the intention that the appellee should receive 300 actual horse power, together with such starting surges as it might require. What these surrounding circumstances were upon which the Court based its finding cannot be surmised for no circumstances that would even tend to indicate that the parties had any such intention were proven in the case. In finding number 7, on page 1061 of the record, the Court finds that the matter of starting surges was never discussed by the parties to the contract. The language used by the Court is as follows: "Which matter of surges was not discussed between the parties to the contract." This finding is in accord with the evidence of the witness Shackleford upon this subject.

Now, the contract expressly provides that the current to be furnished was to be a current of *not to*

exceed 300 electric horse power. The contract between the parties, therefore, which is presumed to express their intention, expressly provides that the current to be furnished shall not exceed 300 electric horse power, which expressly precludes the idea that starting surges or currents were to be furnished for the reason that these currents did exceed 300 electric horse power, and since the matter of starting surges or currents was never discussed by the parties, and that nothing was said about the matter, it is very difficult indeed to conceive of anything upon which the Court could base its finding that the parties did intend to furnish such starting currents. Surely, the Court cannot gather the intention of the parties from any source except either their spoken or written word.

With reference to the balance of the finding that it was the intention that 300 actual horse power should be furnished, the situation is very much the same. The contract expressly provides that the thing to be furnished is current and not power. Under the contract, the matter of developing the current into power is left entirely to the appellee's predecessor in interest, the Oxford Company, and the matter of how much power it will get from the current furnished is left to depend entirely upon the manner in which the current is developed into power. Nor was there a single word of testimony to indicate that any of the contracting parties ever made any statements to the contrary. The matter was not referred to by any of the parties in any

of the conversations or communications had. Nowhere was it stated by anyone that the thing to be furnished was power, either actual or otherwise. Nor were there any statements made that would indicate that it was the intention of the parties that the quantity of current furnished was to be such as to enable the appellee's predecessor to develop 300 actual horse power by the use of such machinery as it might adopt, operated in such a manner as it might see fit. This matter, like the matter of starting surges, was never discussed by the parties. There is not a word of evidence in the record upon it. Mr. Bradley did state in his letter to Mr. Endicott that he considered 150 horse power ample to operate the Sheep Creek mine, but he did not state that the current to be furnished was to be whatever the Oxford Company might choose to make it so long as it did not develop in excess of 150 horse power from it. On the contrary, his proposition was to furnish 200 horse power, 50 horse power in addition to the actual requirements of the mine, the evident purpose of which was to take care of power factor losses and such other losses as might be incident to the operation of the mine, as well as to furnish ample margin which might be used for the starting of such small motors as the mine would require, even though such motors were not supplied with any starting devices. All the testimony in the case precludes the idea that the parties agreed to furnish or receive 300 actual horse power, that is to say, that much de-

veloped power, and there is nothing in the case, not a word of testimony from either side to indicate that the contract does not express the real intention of the parties. That is to say, that the thing to be furnished was a current to be measured by the unit electric horse power, and that the question of how much actual horse power would be developed from this current, whether 300 or something less, was left entirely to the Oxford Company, by which the current was to be developed into actual or mechanical power. Again, the Court finds in that same connection that it was the intention of the parties that the current should be developed by means of induction motors, yet nowhere in the evidence is there a single word of testimony to the effect that any of the parties during any of the negotiations carried on, ever mentioned or referred to the use of any kind of motor whatsoever, or in any wise discussed the matter of how the current was to be developed into power, just as in the cases just previously mentioned this matter was not discussed at all. None of the parties ever mentioned it and the contract itself is wholly silent upon the subject. Nor is there any reason why the parties should discuss this matter, for if the thing to be furnished was current, and there can be no dispute upon that subject, which was to be developed by the Oxford Company, the question of how this current was to be developed was a matter in which the Oxford Company alone was concerned. It did not concern Mr. Bradley, and there

is no reason why it should ever be discussed or mentioned by the parties. At any rate, there is nothing in the evidence to show that it ever was discussed and the finding of the Court in regard to the other matters just discussed has nothing to support it.

Again, on page 14, counsel adopts the portion of the Court's findings in connection with their statement of facts. According to this finding, the Court finds that for loads of 300 horse power or less, induction motors having inherent phase displacement and a power factor of less than unity, were in ordinary and practical use in mining, and that for that reason the appellants contemplated the use of such motors at the time the contract was executed. The evidence upon this subject is this, that at the time the contract was executed, there were no motors in use in the district in connection with mining operations either of the induction type or any type (See evidence Kinzie, Record, page 516). Upon this question there is no dispute in the evidence. The first motors that were installed in connection with mining operations in the district were installed by the appellants after the construction of the Sheep Creek plant and at the present time there are but three motors in use in the district in connection with mining outside of the motors used by appellants, and these three motors are the motors owned by the appellee and the Alaska Juneau Mining Company (See evidence Kinzie, Record, page 515).

This matter also is not disputed in the evidence. The evidence of such men as Professor Cory, professor of electrical engineering at the University of California, Mr. Davis, engineer in charge of the business of the General Electric Company of San Francisco, Mr. Heise, the engineer in charge of the business of the Westinghouse Electric Company of San Francisco, Mr. Quinn, the engineer in charge of the Allis-Chalmers Company in San Francisco, and Mr. Hunt, an engineer located at San Francisco, and others that testified at the trial, was to the effect that both motors of the induction type and synchronous motors now are and for a long time past have been in general use in mining, although it is probably true that where small motors are required motors of the induction type outnumber synchronous motors. But both were in general use, and since no one said anything about motors of any type at the time the contract was executed, the matter never having been mentioned by any of the parties, the finding of the Court that the parties contemplated the use of any one motor or another, is wholly without any evidence or support. Nor would it be material in view of the fact that the matter of the development of the current is left entirely to the Oxford Company, who, of course, had a right to select their own motors. There was, therefore, no reason why the subject should be discussed by the parties.

The statement, quoting further from the Court's

finding, then proceeds that the power contract was for 300 actual horse power distinguished from 300 apparent horse power, and that the contract contemplated the beneficial use of 300 actual horse power as ordinarily spoken of and ordinarily measured by common and ordinary instruments for the measurement of horse power. It is hardly necessary to discuss this matter any further for the reason that counsel in their brief on page 54 expressly admit that the thing to be furnished was not power but current, and by that admission do away with this finding of the Court. Of course, if the thing to be furnished was current, then the thing to be measured was current, and current cannot be measured by instruments either ordinary or otherwise that are designed to measure power, but must be measured by those instruments which are designed to measure current. Counsel then refer to the testimony of Mr. Kinzie, general superintendent of the appellant companies, to the effect that the appellant companies are at present using only motors of the induction type, although two motors of the synchronous type have been ordered to be installed later. Mr. Kinzie in his testimony expressly states why motors of the induction type are in use by the appellants. His testimony is that when their motors were installed they had a surplus of current, and that for that reason it was not highly important that all the current should be developed into power. That since

motors of the induction type were simpler and more easily operated, these motors were installed, but that since that time the power requirements of the Treadwell mines had increased so that it became necessary to develop all the current into power, and for that reason the motors of the induction type were now replaced by motors of the synchronous type (See evidence Kinzie, Record, page 516). It is difficult to conceive how this testimony can be quoted as supporting the finding of the Court referred to. The counsel quote from the testimony of Mr. Davis, a part of his answer to cross interrogatory number four. They do not, however, quote the balance of his answer, which is as follows: "The General Electric manufactures standard synchronous motors of 250 and 150 horse power, but for various reasons the demand for these small synchronous motors is restricted." While the testimony of Mr. Davis, therefore, is to the effect that in small units more motors of the induction type are used than synchronous motors, it is also to the effect that synchronous motors are manufactured and in use. The answer of Mr. Davis to cross interrogatory number three, page 862, is to the effect that in the smaller sizes induction motors are more generally used, while in the larger sizes synchronous motors are more generally used. But whether more generally used, or less generally used, no witness disputes the fact that both motors are and were in general use. Again, in

answer to direct interrogatory number twenty-one, which interrogatory reads: "Are synchronous motors in general use?" The answer of Mr. Davis occurring on page 860 of the record is "Yes," and the answer of all the other experts whose testimony was taken upon the subject is the same, and the testimony of Mr. Kinzie is to the effect that synchronous motors have been in general use for many years, long before the execution of the contract of October, 1909.

There is nothing, then, in the testimony of any of these witnesses to support the finding of the Court or this statement of counsel. Again, on page 16, counsel make the statement that it is further to be observed that the appellants ordered a curve-drawing wattmeter to be placed upon the appellee's circuit. Here let it be said that the appellants have placed upon each circuit a wattmeter, as explained by general superintendent Kinzie in his testimony, and that it would be highly proper to place a wattmeter upon appellee's circuit. The purpose of placing these various wattmeters upon these various circuits is not to measure the current. This function the wattmeters cannot perform. Nor is there any reason why appellants should measure the current upon their own circuit, for they are using the current themselves. The object of placing wattmeters upon these circuits is obvious. The wattmeter measures the quantity of power actually developed. The ammeter measures the

volume of current at a fixed voltage that is being developed. By reading the wattmeter and the ammeter, one is enabled to see at an instant how much of the current is distorted and wasted. That is to say, how much of the current registered by the ammeter is not developed into actual power as indicated by the wattmeter. This furnishes an effective check upon the apparatus and enables the operator to determine its efficiency from time to time. It, for instance, enables the appellant companies to determine that they are operating at a power factor which ranges from 85 to 95 per cent., and would inform them immediately of the fact that there was something wrong with their apparatus by showing that the power actually developed from the current was less than this. That appellee should do the same thing with its circuit is apparent from the fact that it is operating at about 60 per cent. Suffice it to say that if the wattmeter and ammeter readings made by appellants on their own circuit should indicate that they were operating at any such power factor as this, the machinery would be at once shut down and the cause of this low power factor ascertained and corrected. This is exactly what the appellee should do. If it did this, it would make no material difference whether it used induction motors or motors of the synchronous type, for the power factor loss when the motor is operated at from 85 to 95 per cent. is very slight, and

it makes but little difference whether motors of the induction type or motors of the synchronous type are used. But where no such precautions are taken, and motors are permitted to operate at 60 per cent. or some other power factor probably very much less than 60 per cent., the difference of course, becomes enormous. Appellee should install a wattmeter upon its circuit, not for the purpose of measuring the current furnished them by the appellants, but for the purpose of measuring the power actually developed by it in order that it may determine how much current it is wasting from time to time and correct the difficulty that causes the waste whenever such difficulty occurs. It is not the duty of the appellants to furnish a wattmeter for this purpose, for they are only obliged to furnish the current, and the wattmeter when so used is used as an aid to developing the current, which is the business of the appellee.

The statement then proceeds on page 16, and counsel quote further from the findings of the Court as follows:

“The Court further found that in making the contract the Oxford Mining Company relied and had a right to rely on the representation made by the appellants, to the effect that it was the purpose of the appellants to furnish the amount of power stipulated in the contract, for real, actual and working efficiency, together with such momentary surges necessary to start the machinery of the Oxford Mining Company, or its successors; and to give to

the Oxford Mining Company, or its successors, the uninterrupted use of 300 real horse power to be used in connection with ordinary motors commonly used upon loads of 300 horse power or less, including induction motors."

This finding of the Court, like its previous findings, is wholly without any previous testimony to support it. There is no evidence that any representations of the character mentioned were ever mentioned to the Oxford Company. No witness testified that any such representations were made, and the contract entered into between the parties negatives the fact that such representations were made. The only representation that Mr. Bradley made to the Oxford Company was in his letter to Mr. Endicott wherein he stated that in his opinion 150 horse power was ample to operate the Sheep Creek mines, and this representation Mr. Endicott did not rely on, for he called in his own expert, Mr. Thane, who told him that 300 horse power would be required, and the amount reserved was afterwards by agreement of the parties changed from 200 to 300 horse power.

On page 17 it is stated that no power or current was delivered until the 8th of November, 1912. This statement is undoubtedly true, and the reason that no current was delivered until that day is found in the fact that none was demanded. Prior to that time the appellee had no use for current. Had current been demanded before that time, it would have been fur-

nished. Counsel states in substance that because they did not get power until the 8th of November, 1912, that it was inequitable for them to deprive the appellee of momentary starting surges after that, which he states are only worth 5 cents each, figured upon a basis of \$87 per horse power year. Here let it be said that while it is true that a starting current of 30 seconds, calculating the volts and the amperes actually furnished during those 30 seconds, would only be worth probably 5 cents per horse power year, this does not do away with the fact that under the decree of the Court the appellants must be ready to furnish these starting surges at any and all times and must, therefore, keep in reserve sufficient current to furnish these surges. This current so kept in reserve is of no use to anyone except during the 30 seconds when it is actually drawn by the appellee; the balance of the time it circulates idly in the circuit. But this does not change the fact that the appellants must generate it and keep it where it is available at all times, and that this is equivalent to furnishing it at all times, even though it is only demanded at infrequent intervals. In answer to cross-interrogatory number 19, Mr. Davis of the General Electric Company, when asked as to the value of these starting currents, testified as follows:

“The value in kilowatts of a thirty second starting surge of 600 horse power as measured by the amount of water used will be 5 cents, but the value as representing interest charges, maintenance and

operating costs applying to generator, transformer and distributing capacity will vary from \$20,000 to \$50,000 per annum" (see evidence Davis, Record, page 865).

Again, in answer to cross-interrogatory number 20, Mr. Davis, after testifying to the direct losses that would result from the drawing of these surges, uses this language:

"The indirect losses from such injury to the regulation might prove to be a serious matter."

Professor Cory, in answer to the same question, does not estimate the exact cost per year of maintaining the additional machinery necessary to furnish these surges, but says that machinery and appliances of sufficient size to allow such starting surges would be very considerable (see evidence Cory, record, page 830). In answer to cross-interrogatory number 20, found on the same page of the record, Professor Cory uses this language:

"These surges require an increase in the size of the plant, increasing the investment necessary, and what is of more serious consequence, such surges interfere with the service given by the plant to all other circuits or customers."

Mr. Hunt, in answer to cross interrogatory number 19, the answer to which is found on page 901 in the record, testified that the value of such a surge, as measured at so much per horse power year would be 5

cents. "However, this is not a measure of the value of such a surge. The amount of such a surge in relation to capacity of plant may be such as to require an investment in electrical apparatus, greater than the total investment for such apparatus for handling 300 horse power without such surges."

(See evidence Hunt, Record, page 901).

Again in answer to cross interrogatory number 20, Mr. Hunt uses this language: "Such surges do have a very serious effect upon the operation of a generating plant, especially when the ratio of the amount of such surges to the plant capacity is considerable, and the operation of other connected load may be seriously interfered with under such conditions. Such interference may be so serious as to make the remaining power which the plant is capable of producing absolutely unfit for some uses."

(See evidence Hunt, Record, page 902).

The answer of Mr. Heise to interrogatories numbers 19 and 20 is of like effect. (See evidence Heise, page 936.) Mr. Quinn, the eningeer in charge of the business of Allis-Chalmers Company, in answer to the same cross interrogatory number 19 on page 972 of the record testifies as follows: "The value in United States Gold Coin of a 600 horse power starting surge continuing during a period of 30 seconds is practically

insignificant. The value of keeping such a surge off the supply system cannot be measured in dollars and cents. Such a surge under some conditions might cause the suspension and shutting down of all mining operations which were receiving their electric power from the source of supply affected by such a surge," and in answer to cross-interrogatory number 20 on page 973 of the record, this same witness testified: "Assuming that the source of power is limited and such a surge occurred, and that the source of supply was furnishing electric current to operate electrically driven pumps handling cyanide solutions, the stoppage or interference with the duty of these pumps would possibly cause a very large monetary loss. This is merely an instance where such an interference could cause a serious loss." Continuing the witness says: "If a motor of 300 horse power requires 600 horse power to start, it is reasonable to assume that the Supply Company must at all times have available 600 horse power to start the motor, and if the motor under full load used but 300 horse power there would necessarily be 300 horse power standing idle. Assuming that the cost of installing 1 horse power is \$100.00, this would represent an investment of \$30,000.00, which at 6% per annum would amount to \$1800.00. To this there should be added depreciation on the idle machinery, which under usual engineering practice in a plant of this kind is computed at 7% per annum, which would amount to \$2100.00 for depreciation."

It must be remembered that all the foregoing answers are based upon a question which assumes that the starting surge will not exceed 600 horse power. The evidence, however, shows that the starting surge required by the motor in use by the appellee far exceeds 600 horse power, and that the starting surge of that motor is approximately five times as great as its running current. Having in view the foregoing testimony, however, it is not a difficult matter of calculation to determine that the starting surge actually required by the motor now in use by the appellee is so great that it will exceed many times the value of the original 300 horse power, and actually distorts the entire value of the Sheep Creek plant, especially so in view of the fact that the balance of the current there generated is used by appellants in connection with mining operations. In considering this testimony it must also be borne in mind that the character of the witnesses testifying is such as to place their testimony upon the bases of absolute authority. Professor Cory is the professor of electrical engineering at the University of California, and his reputation in connection with electrical matters is such that his word upon matters pertaining to electricity imports absolute verity. Mr. Hunt's reputation as an electrical engineer is likewise an established one, and the other four experts occupy positions at the head of four large concerns dealing in electrical apparatus, which establish them as authorities upon electrical matters.

Counsel then makes the statement that the appellee is doing development work, and that its operations will be delayed or hampered unless it is furnished this current, or, rather this power in accordance with the decree of the Court, insisting that no other current or power is available. We have already shown in the early part of this reply brief that the reversal of the decree would not deprive the appellee of any power, but would merely compel it to use effective apparatus in developing the current furnished. By doing this, it would get just as much power, if the contention of appellants were sustained as it could get under the decree of the Court, and, therefore, its operations can in no wise be affected by a reversal of the decree, except that they will be obliged to install more adequate machinery. Furthermore, the statement that other power is not available and cannot be procured is not borne out in the record. The evidence shows that the appellee is the owner and was at the time of the trial of the case, in possession of a gas plant, which generated a current of over 200 horse power. (See evidence Wallenberg, record, pages 265, 271), and Mr. Thane, the general manager of the appellee, testified on page 211 of the record that in the course of six weeks from the time that he was testifying, which was in the early part of this year, he would have one of the units of the Salmon Creek power plant which was being constructed by the appellee, under operation, and that they

would get from five to six hundred horse power from Salmon Creek after that time. Several months have already elapsed since then, so that the appellee has now actually a current of about 800 horse power for its use which is generated by its gas plant and this Salmon Creek plant.

There is, of course, no reason why any quantity of current could not be obtained by the appellees in the same manner that this 800 horse power is obtained by them, either by enlarging the gas plant or developing other water powers besides Salmon Creek. On page 19 of the brief counsel make a statement that when the power was first demanded by the appellee, the appellants placed a practical construction upon the contract, and set their circuit breaker at 100 amperes. This statement is altogether misleading. It is true that the circuit breaker was at first set at about 100 amperes, so that almost 600 horse power could be drawn, but this was in the fall of the year when water was still plentiful, and there was no reason why the appellee should be strictly limited to the amount to which it was entitled. The evidence shows that for certain months of the year there is much water in Sheep Creek, so that there is ample power for everyone. It also shows that during the winter months the flow of water is very slight, so that power becomes scarce and it was in December, when power became scarce that the appellants set their circuit breaker at

about 60 amperes with a view of supplying 56.2 amperes, the amount to which it was entitled under the contract. At that time the record shows the water was scarce, and it was necessary to reserve for appellants use of the power to which they were entitled. The testimony is that during the month of January, when the case was on trial, the water in Sheep Creek was so scarce that the generators were only generating approximately 500 horse power. Hence, the necessity of limiting the appellee during the winter months to the amount of current to which they were actually entitled. On page 21 occurs a statement that the evidence shows that the voltage maintained amounted to about 300 volts. This is an evident error in printing, as it is conceded that the voltage was maintained at 2300 volts. On page 21 counsel then makes reference to the fact that the Court finds that an instantaneous circuit breaker is not the usual or ordinary type used upon feeders leaving the power house, and that the usual and ordinary type of circuit breaker in such cases is the time relay circuit breaker. Here again the finding of the Court is without any evidence to sustain it. Appellants have in use three time relay circuit breakers, one at the Sheep Creek power house, one at the Nugget Creek power house, and one at the steam turbine plant. The use of these circuit breakers is clearly explained by Mr. Kinzie in his testimony on page 499 of the record. The time relay circuit breaker is

only used while an instantaneous circuit breaker is also used. It can be safely employed upon main lines leaving power houses if instantaneous circuit breakers are placed upon each branch line feeding from the main line so that any short circuit or peak occurring on the branch line will throw out the instantaneous circuit breaker before the main line is affected by the peak. The only way that a time relay circuit breaker can be safely employed on appellee's system is to require the appellee to place an instantaneous circuit breaker between its motor and the time relay circuit breaker. All this matter is fully explained in Mr. Kinzie's testimony. (See evidence Kinzie, record, page 499.) The testimony of Professor Cory, Mr. Davis, Mr. Hunt, Mr. Heise, and Mr. Quinn is to the effect that the instantaneous circuit breaker is the only device that can be employed in this connection. (See evidence Cory, record, page 822; evidence Davis, record, page 862; evidence Hunt, record, page 896; evidence Heise, record, page 932; evidence Quinn, record, page 966.)

Counsel state on page 20 that it is interesting to note that appellants maintain a wattmeter and time relay circuit breaker at Sheep Creek upon their own main line, while they placed an instantaneous circuit breaker and ammeter on appellee's line. The reason for this has already been explained. On page 22, counsel refers to the findings of the Court where the Court finds

that the starting of machinery, which will consume a given amount of power, often causes what is known as a starting surge which lasts from 10 to 30 seconds, but from a practical standpoint is not taken into account or charged for in electrical connections and is disregarded and provided against by the use of the ordinary type of time relay circuit breaker. This statement is fully answered by us in connection with the discussion of the value of a starting current and its effect upon apparatus, and the fact that Mr. Dunn, a bookkeeper for the Puget Sound Electric Light Company, says it is a custom to make no charge for starting surges does not in any wise alter the effect of the testimony of the witness upon that subject. Lighting companies frequently supply very small motors with current and it can readily be seen that such a custom might obtain where the motors were supplied with probably as small as 2 to 4 horse power. But whatever Mr. Dunn's custom may be, it is difficult to see how that can affect the rights of parties in this case.

On page 23 of the record, reference is made to the finding of the Court to the effect that the Alaska Juneau Company is also supplied by appellants with some current, and that it is not charged for starting surges. In this connection it must be remembered that the Alaska Juneau Company is under the same management as the appellant companies, and that it is paying for current measured in exactly the same man-

ner that appellants claim the current of appellee should be measured, and, further, that its circuit is protected by an instantaneous circuit breaker just as the appellee's circuit is. Its motor is not a squirrel cage motor, but a form M General Electric, which requires but a very slight starting current, and the Alaska Juneau Company is paying \$65 per horse power year for its current as against something over \$6 which the appellee's current costs it. The appellants have a right to make whatever contract they see fit with the Alaska Juneau Company, and since the concern is under the same management, these starting currents can be supplied without any inconvenience, except that during the time that the motor is started, it may be necessary to get up steam and increase the general supply of electric current in that manner so as to meet the incoming peak. This can be done in the case of the Alaska Juneau Company, because the demand for surges will not be made without notice, and it is not necessary to keep constantly on hand a large supply of electric current to meet these demands.

On page 25, it is stated that the Court found that it is a common practice, where a certain kind of horse power is used, for the producing company to allow a reasonable starting surge to the customer. There is no testimony in the record upon which this finding can be based. The evidence shows that in the district

of Alaska there are no power companies supplying current to customers in large quantities for mining purposes. Hence no such custom can obtain in Alaska. However, whatever might be the practice in this regard would not in any wise affect the operation of the parties to the contract. In any event, however, there is no testimony upon which to base this finding of the Court.

On pages 25 and 26 counsel makes some reference to the finding of the Court to the effect that the appellants have required the appellee to notify their head office at Treadwell whenever the circuit breaker was thrown out. There are, of course, many reasons that might occur to anyone why the appellants should want to know and be informed from time to time, and if this has caused the appellee any inconvenience, there is no reason why it should not install a circuit breaker upon its own line, set just as the circuit breaker of appellants is set, so that any peak passing over the line would reach the appellee's circuit breaker first and throw it out, and by so doing leave appellant's circuit breaker intact. The appellee could then throw out and throw in its own circuit breaker just as often as it might please to do so without any necessity of notifying the appellants, or without being placed to any inconvenience except to throw in the circuit breaker after it had been thrown out. In any event, none of these matters could have any effect upon the rights of the parties to the contract.

On pages 27 and 28, the counsel refers to that finding of the Court in which the Court finds from the surrounding circumstances that the starting surge was naturally to be implied or to be presumed, and that without a starting surge in connection with induction motors, which the Court finds is the ordinary type in mining use for loads of 300 horse power or less, the practical and beneficial use of more than 100 horse power could not have been obtained. In connection with this finding it may be stated that with the type of motor employed by the appellee not supplied with starting devices of any kind and started under full load conditions, a motor of 100 horse power would probably require the entire 300 horse power or more to start. But the assumption that the parties to this contract had in mind the use of this wasteful and inefficient type of motor to be started under full load conditions without starting devices, is certainly a violent one. It may be true that the motor now used by appellee, not supplied with starting devices, cannot be started unless a current greatly in excess of 300 horse power is furnished for that purpose, but it is equally true that the load could be removed at the time of starting so that no additional starting current is required, and it is also true that the motor could be supplied with starting devices so that it could be started under full load conditions without requiring any additional power.

Professor Cory, Mr. Davis, Mr. Hunt, Mr. Heise, and Mr. Quinn are a unit in testifying not only that this can be done, but that it is entirely practical and is being done. Mr. Thane, the general manager of the appellee, testifying as an expert witness, testifies on page 193 of the record that if starting apparatus were provided, their motor could be started without drawing any additional current. This matter is not open to dispute. Nor is there any doubt upon the subject that the load could be removed and the motor started without its load without requiring an additional starting current. But when this contract was made by the parties, it was not contemplated that the current should be developed by one large motor. The current was reserved for use in the Sheep Creek mines. To operate these mines it was, of course, necessary that a number of small motors should be installed in connection with the various pieces of machinery necessary at the mine. If small motors were installed and the same were started one at a time, they could, of course, be started without adding any starting current. All this is fully explained by Mr. Bradley in his evidence. (See evidence Bradley, record, pages 680, 689.)

Furthermore, a surplus of 59 horse power was allowed or provided for so as to take care of all of these matters. The whole difficulty with the situation lies in the fact that the current was originally reserved to operate the Sheep Creek mines and that it is not now

being employed in connection with the operation of these mines, but in connection with the operation of other mines. That instead of using a number of small motors such as would be installed at Sheep Creek if the current were their usual one, a large motor has been installed. Surely, the parties at the time of the making of the contract did not have any such thing as this in contemplation, for this new use to which the power is now applied did not exist at that time. In any event, there is no ground for determining or for holding that the parties ever contemplated that the entire capacity of the Sheep Creek mine, or at least a large portion of its capacity, should be kept in idleness at all times in order that it might be there when occasional demands for starting currents might be made upon them, especially in view of the fact that starting devices, doing away with the necessity of starting currents are so readily and easily obtainable.

EQUITY WITHOUT JURISDICTION.

In reply to the discussion of the authorities by appellee's counsel, commencing on page 32, with reference to the jurisdiction of a court of equity to enforce the contract under discussion, we have this to say:

In the first place, many of the authorities cited by us are not discussed by counsel, and are not sought to be distinguished. These authorities are on all fours, and cannot be distinguished. As to those cases discussed by

appellee's counsel, we will endeavor to show that their interpretation of the cases themselves is at fault, and that the principles laid down in the case are not correctly applied by them.

The appellee relies almost entirely upon *Franklin Tel. Co. vs. Harrison*, 145 U. S., 459; 36 L. Ed., 776, to support its contention that the personal services and continuous performance involved in the performance of the present contract are not a bar to equity's taking jurisdiction. A closer examination of that case, as set forth in appellants' brief (p. 55), shows that the Franklin Telegraph Co. case cannot be considered an authority in point and that the argument of the appellee, based thereon, must fail.

The difficulty of continuous performance, and the danger of having the same litigation always on the calendar and always before the Court, was in no way considered by the Court or by counsel in the Franklin Telegraph Co. case. Appellee argues that eminent counsel and an able Court must have considered that point. But it is evident that if the Court had had that point called to its attention it would have, in the course of so exhaustive and so careful an opinion, noted and decided it expressly. The question as to equity's having jurisdiction to enforce a contract involving continuous performance is no minor or negligible question, and had the question been raised it would have been considered. It is possible, indeed

probable, that counsel for the appellants did not deem it expedient to raise the question because of personal reasons; and if the question were not raised, the Court would scarcely consider it of its own initiative. At any event, the bald fact remains that the question was in no way considered by the Court; and it cannot be said that the Supreme Court, by ignoring a point, intended to establish a binding precedent.

The appellee's position, moreover, clearly proves how great the danger is of having this case constantly in court, for it argues that if the appellee should install machinery having an unusually low power factor, or should waste the current unduly, the appellant can always seek relief from this court (Appellee's Brief, p. 74). In short, the appellee expressly admits that this suit must be before this court continuously.

The Franklin Telegraph case, moreover, is clearly distinguishable because there was no feature of personal service therein as there is in the present case. Appellee denies this fact without argument, and quotes certain irrelevant passages from the decree of the Court in the Franklin Telegraph Co. case. It is obvious that in operating an electric power plant and in supplying a current of electricity, a high degree of personal skill and discretion is involved; whereas the maintenance and upkeep of a telegraph line already built and in operation is merely a matter of ordinary services. To maintain the plant at Sheep Creek and supply the current ordered by the Court below, the

appellant will be forced to employ highly trained expert engineers and electricians and the services rendered will be subject to all the uncertainties of personal service.

It is, moreover, clear that in the Franklin Telegraph Co. case the defendant was a public service company; and therefore a court of equity would assume jurisdiction despite the difficulties involved because of the public interest involved. As the Supreme Court said in *Union Pac. Ry. Co. vs. Pacific Ry Co.*, 163 U. S., 564, 603, in discussing this class of cases wherein public service companies are involved:

“Clearly the public interests involved in the contracts before us demand that they should be upheld and enforced.”

Appellee, in its brief, devotes considerable time and space to an attempt to prove that in enforcing the present contract there would be no difficulty of personal services involved. It is clear that to produce a sufficient electrical current to meet the decree of the lower court, the appellant will have to operate the most delicate electrical machinery requiring the highest degree of technical skill and judgment. Appellee, however, argues that the argument as to personal services is based entirely upon the fact that in certain cases a decree of specific performance would involve involuntary personal servitude. That is not the underlying reason for a court of equity's refusing

to decree the performance of personal services; the fundamental reason is that personal services involve so much discretion, are so intangible and so incapable of measurement by any fixed rule, that a decree ordering the specific performance thereof would be nugatory. The Court cannot, in other words, ascertain whether or not the plaintiff is receiving the kind of personal services desired—it would be impossible and impractical for it to order the performance of an act over which it can have no control. Equity never hesitates to imprison a man for refusing to convey land; the mere involuntary servitude is no barrier; the real barrier is the uncertainty and indefiniteness of the act to be performed. As the Court said in *Marble Co. vs. Ripley*, 77 U. S., 339, 358,

“These duties are continuous. They involve *skill, personal labor, and cultivated judgment*. It is, in effect, a personal contract to deliver marble of certain kinds, and in blocks of a kind, *that the Court is incapable of determining whether they accord with the contract or not*. The agreement being for a perpetual supply of marble, no decree the court can make will end the controversy. If performance be decreed, the case must remain in court forever, *and the court to the end of time may be called upon to determine, not only whether the prescribed quantity of marble has been delivered, but whether every block was from the right*

place, whether it was sound, whether it was of suitable size, or shape, or proportion. Meanwhile the parties may be constantly changing. The marble company are liable so long as they hold the land, and Ripley's rights exist only while he holds the mill. It is manifest that the court cannot superintend the execution of such a decree. It is quite impracticable."

See, also:

Karrick vs. Hannaman, 168 U. S., 328, 326;
Shubert vs. Woodward, 167 Fed., 47, 59.

The appellee's attempt to distinguish between the delivery of a commodity like marble of a certain size and form as in *Marble Co. vs. Ripley* (*supra*), and a current of electricity of a certain voltage and amperage, will not stand scrutiny. In both cases a commodity involving skill and personal judgment in its production is to be delivered, and in both cases, equity, because of the impossibility of enforcing its decree, must refuse to take jurisdiction.

The appellee has tried to distinguish various cases cited by the appellant in its brief; but a further examination of the appellee's grounds show that the cases are clearly in point and that the arguments used to distinguish them lack cogency or meaning.

Tex. & Pac. Ry. Co. vs. Marshall, 136 U. S., 393, 394; Law Ed., 389. This case is not based, as the

appellee contends, upon the ground of public convenience. To be sure the interest of the public, since the defendant was a public carrier, was given due weight by the Court; but the Court expressly rested its decision upon the grounds of continuous performance and personal services.

"If the Court had rendered a decree restoring all the offices and machinery and appurtenances of the road which have been removed from Marshall to other places, it must necessarily superintend the execution of this decree. It must be making constant inquiry as to whether every one of the subjects of the contract which have been removed has been restored. It must consider whether this has been done perfectly and in good faith, or only in an evasive manner. *It must be liable to perpetual calls in the future for like enforcement of the contract, and it assumes, in this way, an endless duty, inappropriate to the functions of the court, which is as ill-calculated to do this as it is to supervise and enforce a contract for building a railroad, both of which have in this country been declared to be outside of its proper functions, and not within its powers of specific performance.*"

Berliner Gramophone Co. vs. Seaman, 110 Fed., 30, 31. It is impossible to argue that because the contract in the *Berliner Gramophone Co.* case was entirely executory, it can be distinguished from the present case where the appellee's covenants have been partly performed. The difficulty in both cases arising from continuous performance and personal services is

precisely the same, and the fact that the contract is partly executed or entirely executory is of no significance, either on reason or on authority.

General Electric Co. vs. Westinghouse, 144 Fed., 458. The fact that in this case neither party had changed its position was not taken by the Court as the sole and final ground for denying equitable relief. The Court expressly rested its decision upon the impossibility of ordinary specific performance.

“Assuming that the contract is valid between the parties, is it of such a nature that equity will interfere to prevent a violation thereof by either party? It is clear that equity cannot compel the General Electric Company to manufacture and sell to the Westinghouse Company controllers such as are described in the complaint. It is a continuing contract, running for 15 years, and the courts will not undertake to supervise and compel performance of such a contract.”

Sewerage & Water Board vs. Howard, 175 Fed., 355, 559. Had the appellee quoted the full paragraph wherein it found a statement upon which it bases its argument that the bill was dismissed because of an adequate remedy at law, the fallacy of that contention would clearly appear.

“Furthermore, the bill alleges that complainant will be damaged in a definite sum by the anticipated violation of the contract, and it does not allege the insolvency of respondent, or suggest that, for any reason, damages could not be collected.

It is evident that in this case the Court cannot make a decree ending the controversy, and, if performance be decreed, the case must remain in court for a long and indeterminate period."

Lone Star Salt Co. vs. Texas Railway, 90 S. W., 863. It is true that in this case there appeared the additional difficulty of superintending the plaintiff's business; but that additional difficulty is peculiarly applicable to the present case, for the appellee has admitted in its brief (p. 74) that the Court must regulate the appellee's plant to prevent the appellee from wasting the current or using wasteful machinery. Moreover, the absence of such additional difficulty does not allow equity to enforce a contract wherein the difficulty of continuous performance arises.

Pacific Electric Co. vs. Campbell Johnson, 94 Pac., 623. It must be clear that the same difficulties of continuous performance and personal services that prevented the Court from decreeing the operation of a railroad will prevent the Court here from decreeing the operation of an electric plant. The difficulties involved in both cases are precisely the same.

Peterson vs. McDonald, 110 Pac., 465 (Cal.). It is difficult to see how the appellee can admit that the pumping and delivery of water in this case involves personal services and yet deny that personal services are involved in the generation and delivery of a current of electricity. There is no involuntary servitude

involved in one case any more than there is in the other. The appellee's admission that personal services are involved in *Peterson vs. McDonald* and its assertion that the decision was rested on the impossibility of decreeing the performance of personal services is simply a restatement of the appellant's argument and shows conclusively that a court of equity cannot take jurisdiction in the present case.

The case of *Gallagher vs. Equitable Gas & Light Co.*, 141 Cal., 699, 708, cited by appellee as overruling in effect *Peterson vs. McDonald*, was simply a mandamus issued against a public service corporation ordering it to supply gas to a customer. It is clear, as the Court therein says, "it is not an action for specific performance in the strict sense." The gas company can go out of business so soon as it chooses; the Court simply holds that so long as it is a public service corporation it must serve all who apply. In the present case the Court is enforcing a contract between private individuals; the appellant can never cease generating current, and, moreover, is in no sense a public service corporation. It is easy enough for a court to order a public service corporation to supply gas at so much a cubic foot to a customer while it remains in business; it is entirely different to order a private corporation to generate and deliver a current of electricity forever.

Pantages vs. Grauman, 191 Fed., 318. This case is expressly admitted to be in point by the appellee. All that the appellee says thereunder as to good faith, skill and business judgment of the parties and the inability of the Court to enforce its decree applies with equal vigor to the present case.

The additional cases, cited by the appellee, are clearly not in point.

Ala. Rwy. vs. Highland, 98 Ala., 407, 13 So., 684. The Court in granting relief here expressly stated that it could not order the defendant to construct and maintain the crossings because of the personal services and continuous performance involved; but the contract expressly provided that if the defendant failed to construct and repair the crossings the plaintiff could do so at the expense of the defendant. So the relief ordered was simply the payment of money.

"If the agreement had stopped here, possibly it would have left the Highland & Belt Company under the contract obligation to personally construct and repair the necessary crossings—a service in its nature personal, 'involving the exercise of personal skill, judgment and discretion,' and of indefinite duration. *So interpreted, the chancery court possibly would not and could not undertake to administer and specifically enforce such contract.* But the agreement did not stop there. Its provisions are that if the Highland & Belt Company, after 30 days' notice, failed to renew or repair such crossings, then the South & North Company could do so, at the cost and expense of the

Highland & Belt Company. This, upon each recurrence, could only entail a money liability, and would not impose on the chancery court the duty of retaining the case for continuous administration."

Schmidt vs. Marble Co., 101 Ky., 478; 41 S. W., 1024. This case involves a public service company, a railroad, and the interests of the public make it necessary in such cases for equity to decree specific performance. In the present case, however, there is neither a public service company nor the interest of the public involved. As the Court said in *Lone Star Salt Co. vs. Texas Short Line Ry.* (Texas), 90 S. W., 863, 868, these railroad cases are not in point at all.

"These cases have little other resemblance to the one before us than that most of them were actions for specific performance in which the principles governing the remedy were discussed and applied. The effect of all of those in the Supreme Court of the United States, except the case of the *Telegraph Company vs. Harrison*, was to require the defendants to admit the plaintiffs to the use of tracks, terminals, or rights of way, or other property to which use the plaintiffs were entitled, either by contract or by law. It was necessary only for the courts to require that the defendants allow the plaintiffs to exercise the rights to which they were entitled under the law or the contract. The courts did not have to direct the management of the businesses of the parties, except in the arrangement of some details for which the contracts furnished the rule. The *Telegraph* case was of the same nature. The contract bound the defend-

ant, who had purchased a telegraph line from plaintiffs, to maintain upon the poles in their line a wire of which the plaintiff was to have the use in sending messages. The decree merely required the keeping up of the wire for plaintiff's use."

Barley vs. Collins, 59 N. H., 402. In this case the only relief asked and granted was an injunction restraining the defendant from manufacturing or selling any leather board in violation of his contract. It is elementary that in restraining a defendant from acting none of the difficulties that arise in ordering him to act are present.

Hackett vs. Hackett (N. H.). Since no citation is given for this case in appellee's brief, comment upon it is impossible.

Chubb vs. Peckham, 13 N. J. Eq., 207. The support ordered in this case was probably the payment of money to the plaintiffs; clearly there was no personal service involved. Moreover, the Court does not consider at all the difficulties arising from continuous performance.

St. Regis Paper Co. vs. Santa Clara L. Co., 65 N. E., 967 (N. Y.). The decision in this case was not that the contract be specifically enforced, but simply that the issues be tried to ascertain whether or not the contract was one that equity could enforce.

"The view we entertain of this case renders it

unnecessary to decide at this time whether a court of equity should enforce the specific performance of this contract, or should confine the relief granted to the enforcement of its negative covenants. . . .

"After the issues have been tried and the precise facts in this case established, the trial judge will be in a position to determine whether the Court will decree the specific performance of the contract and issue its injunction in aid thereof, or confine the relief to the enforcement of the negative covenants."

It therefore follows that this case is not in point. And moreover the contract in that case would extend only over a period of ten years; in the present case it will be before the Court forever, since there is no limit set to the appellant's covenants.

The citation taken from the *Cyclopedia of Law and Procedure* by the appellee is not by Professor John Norton Pomeroy, author of *Pomeroy on Equity Jurisprudence*, but is by John Norton Pomeroy, Jr.

Texas Co. vs. Central Fuel Oil Co., 194 Fed., 1. The Court expressly limits the application of the doctrine therein announced by the facts that the contract runs only for ten years and no personal services at all are involved.

"The contract sought to be enforced in this case runs for 10 years only, and involves no 'skill, personal labor, and cultivated judgment.' What it does require is easily ascertainable, and, if carried

out in good faith, ought not to give rise to any disputes requiring the interposition of the Court. During the time it was complied with by appellee no disputes arose, and there is no reason for anticipating any now if good faith will control the actions of both parties. That some differences may occur is true, but they are not likely to be of a nature requiring much consideration."

On page 50 of the brief, counsel in seeking to argue that the contract was so ambiguous as to require parole testimony to explain it, quotes from the contract these two clauses: "a current not to exceed 300 electric horse power" and the clause "the 300 electric horse power hereinbefore mentioned." It is claimed by counsel that parole testimony is necessary to show whether under the contract it was intended that a current containing the energy contained in 300 horse power, that is to say 300 apparent horse power, was to be furnished, or whether 300 actual developed horse power was to be furnished. Now, on page 54 of the brief counsel used this language: "Certainly no one contends that anything was to be delivered other than current." A reading of the contract leaves the matter so clear that the thing to be furnished was current that there can be no question as to the intention of the parties in that regard, but the concession of counsel upon page 54 of the brief puts the whole matter beyond controversy. If it is conceded, and as we have stated before, that the contract does not permit of anything else than current to be furnished, then there is no

longer any ambiguity as to whether the thing to be furnished is current or power, and there is not even the slightest excuse for the admission of parole testimony to explain that matter.

THE CONSTRUCTION OF THE CONTRACT.

On page 54 of the brief counsel for appellee state that there is no contention but that the thing to be delivered was current and not power. "But," says counsel, "the question still remains open as to the quantity or volume of that current." Counsel inquire:

"Was it to be such as, with the use of costly intricate and unusual machinery, might be theoretically capable of developing the specified amount of power, or was it that current which, with the use of unusual, ordinary and appropriate machinery, was capable of producing a like amount?"

We respectfully submit that when it is conceded that the thing to be furnished is current, there is very little left to discuss. If the thing to be furnished is current, then the thing to be measured is current and the unit of measurement is the electric horse power. There is no dispute upon the question of what electric horse power consists of. The quotation from Mr. Foster, made in our original brief on page III, is in accord with all the authority upon the subject. Mr. Foster's definition of electric power and its formula for measuring the same is as follows:

"Electric power (symbol p) is measured in watts,

and is represented by a current of 1 ampere under a pressure of 1 volt, or 1 Joule per second. The watt equals 107 absolute units, and 746 watts equals 1 horse power."

All the engineers called in the case agree that this is the way to measure current, that is to say, by multiplying the volts by the amperes, which gives us the number of watts, and if we desire to use the horse power as a unit, it becomes necessary to divide the product by 746, the number of watts in an electric horse power. But counsel says this is theoretical. It is not more theoretical than to measure a bushel of wheat by 60 pounds or a yard by 3 feet. It is simply the way, and the one way, to measure current.

The inquiry of counsel as to whether it is to be a current from which the required mechanical horse power could be developed by costly, intricate or unusual machinery, or one from which the required amount of actual power can be developed by means of ordinary machinery, has nothing to do with the case. The current is measured by measuring the energy contained in it, and that is all there is to it. It does not make any difference whether it is developed by one type of machinery or another, or whether it is ever developed. When a current sufficient in quantity to measure 300 electric horse power is delivered at the bus bars of the Sheep Creek generating plant, the terms of the contract are complied with. The question is, not how much shall or can be developed, but

the question is, what energy does the current contain as delivered? The current is the thing to be measured, and it can be measured in but one way, by multiplying the volts by the amperes and dividing the product by 746, which gives us the quantity of current measured by the horse power as a unit. Nor is it true that such current can only be developed into 300 horse power by the use of costly, intricate or unusual machinery. The synchronous motor in small units is slightly more expensive than the induction motor. But it is not intricate nor unusual, although the number of induction motors in small units in use probably far exceeds the number of synchronous motors in use. But in practical effect it is not necessary that this current should be developed by means of a synchronous motor in order to develop approximately the required 300 mechanical horse power. The evidence shows that the induction motors of appellants are operated at a power factor of from 85 to 95 per cent. When induction motors are thus operated, the power factor loss is but slight, and in developing a current of 300 horse power, would not exceed probably 25 to 30 horse power. The difficulty with the appellee is not so much that it employs a motor of the induction type, as that it operates this motor at a very low power factor. Why the power factor of appellee's motor is down to almost 60 per cent., we do not, of course, know. But it may be due to the fact that the trans-

mission wires are about four miles long, or to the fact that the transmission wires have not been properly installed, or to the fact that the motor is inefficient, or it may be due to a lack of skill in operation, but the fact remains that the power factor of appellee's motor is very low and that with appellee's motor it requires a current of approximately 500 horse power to get 300 horse power. The appellee might install a synchronous motor and either let it get out of repair or operate it carelessly, and the result might be no better. These are matters wholly within control of the appellee and beyond the control of the appellants. The current is delivered to it and it lies with it to develop the current so delivered.

Counsel makes frequent use of the expression "ordinary and usual type of motor," but this expression means nothing. Synchronous motors are ordinary and usual. Induction motors are ordinary and usual. Synchronous motors can be operated so as to develop all the energy contained in the form of current into energy in the form of mechanical power. On the other hand, either type of motors may be operated so that a small per cent. of the energy contained in the current is developed into energy in the form of mechanical power. If induction motors were all operated at a fixed power factor, electricians might possibly be able to adopt a system of measurement for the measurement of current under which a current of a fixed

number of horse power would be a current from which horse power to the extent so fixed could be developed by the induction motor. This would simply be measuring the current in the old way and adding to the amount of current to be furnished a certain per cent. to meet the power factor loss of the induction motor. But since induction motors do not operate at a fixed power factor, the power factor of each induction motor being different from the power factor of every other induction motor, and since the power factor is affected by so many other things, such as the length of transmission wires, number of transformers in use, and the like, and, in addition to this last power factor, varies from moment to moment, depending upon the conditions of the load, it would be wholly impossible for electricians to adopt any such system of measurement.

Nor is there any evidence or authority to the effect that anyone has ever attempted to adopt such a system of measurement until this suit was started. To do so would be to adopt a unit of measurement that would vary in size from moment to moment, and to leave the size of the unit entirely to the discretion of the purchaser, would lead to the most ridiculous conclusions. What would be a current of 300 horse power one moment would only be a current of 200 horse power the next moment, and probably the next moment the same current would be a current of 500 horse power. No witness testified upon the trial that he had ever

seen current measured in that manner, for the obvious reason that current could not be so measured. If developed power were the thing to be furnished, it would, of course, be measured by means of a watt-meter, but no one would make a contract to furnish developed power without specifying in the contract how the current supplied was to be developed into power if the matter of developing the power was left to the purchaser, or without specifying in the contract that the power should be developed at a power factor of not less than a fixed per cent.

It is to avoid all this that contracts are made for the delivery of current, which leaves the matter of developing the current into power entirely to the purchaser so that he can operate at whatever power factor he sees fit. The admission of counsel that the thing to be furnished is current can have no other effect than to work a reversal of the trial Court's decree, for the effect of this decree is that the thing to be furnished is power. This power which is to be developed by the appellee to be sure, but that does not change the effect of the Court's decree, for the unit of measurement is by the Court applied to the developed power and the quantity of current used up in developing this power is left entirely indefinite and unmeasured. Power alone is to be measured. The construction contended for by the appellants is not, as counsel states in his brief on page 55, a theoretical or technical

one. Appellants merely apply to the contract the well-known, ordinary, usual, and in fact, the only rules in existence for the measurement of electric current. Nor is the construction asked for by the appellee a practical one for, as we have shown, it is not only impractical but impossible. The appellees ask that the current be measured in a manner heretofore entirely unheard of, and entirely impossible of application. Counsel then devotes several pages of their brief to a further discussion of the testimony in relation to the matters that led up to the execution of the contract. All these matters have been previously discussed, and we will not again refer to them here. In this connection, counsel re-asserts the fact that the contract was appellant's contract. Why it was appellant's contract, we are unable to see. Mr. Shackelford testified that the original draft of the contract was in his handwriting (see evidence Shackelford, record, page 104), and Mr. Shackelford was the party representing the appellee's predecessor in interest in this transaction. If the contract was anyone's contract in particular, it was the contract of the Oxford Company. We think, however, that it would be fair to say that the contract was prepared by the parties jointly, and was as much the contract of the one party as it was the contract of the other. The discussion of counsel in this connection with reference to secret intentions is wholly beside the issue. There is no evidence that any of the parties had any secret intentions

or that the real intentions were not expressed in the contract. We do not further esteem it important to reply to that portion of the brief of counsel for appellee. It is interesting to note that counsel on page 61 of the brief refers to his clients in making this contract as persons not well informed in matters of this kind, in view of the fact that they had called in Mr. Thane as an expert, and relied upon his judgment in dealing with Mr. Bradley. But all this matter has been gone over before, and we will not again discuss it here. Counsel seeks the aid of the well-known canon of construction that where a contract admits of two constructions, one of which would be equitable and the other inequitable, the Court will adopt that construction which is most equitable. We have already discussed this canon of construction and its application to the facts in this case in our original brief on page 129, and respectfully refer the Court to the discussion there had.

On page 64 *et seq.* of the brief, counsel discussed the matter of surges. We have already gone fully into that matter in our original brief, and will not here repeat what has there been said except to again call the Court's attention to the expressed finding of the Court that the matter of surges was never discussed by the parties and to the express language of the contract that the current is to be a current of *not to exceed* 300 horse power. On page 66 of the brief, however,

counsel makes the statement that it is admitted that if a unit of 300 horse power were installed, that is to say, if a separate generator were installed having a capacity of 300 horse power, they would be able to draw from such generator momentary surges of current in excess of 300 horse power. In this connection, let it be stated that if such a unit, that is to say, a generator with a capacity of 300 horse power were installed, that generator would only generate a current equal to the current that is now being furnished the appellee by the appellants, that is to say, a current of 56.2 amperes with a voltage of 2,300 impressed on a three phase circuit, just such a current as the appellants claim the appellee is entitled to under the contract. It is, furthermore, so self-evident, that it requires no discussion that a current of 300 horse power capacity will not generate a current of more than 300 horse power without over-taxing the generator. It may be true that in rating apparatus the manufacturers leave a slight margin so that the apparatus may be operated to its full rated capacity with safety, and that this rate of capacity may be exceeded, but to do so is to risk the safety of the apparatus itself. Apparatus is only designed to do what it is rated to do. Whenever anyone compels it to do more, he is doing so at his own risk. Counsel use an illustration which is very much in point. They say that an automobile so difficult to crank that a man is required to crank it can be cranked by a boy. That is to say, the boy can

exert an unusual amount of energy for his size and do for a moment the work of a man. This illustration is used to illustrate the fact that a generator of 300 horse power for a moment might be compelled to generate a current greatly in excess of 300 horse power. The counsel should have carried the illustration further. One cannot require a boy to do the work of a man without taking the chance of breaking the boy's back, nor can one require a generator having a rated capacity of 300 horse power to furnish a current in excess of 300 horse power without taking chances of burning out the generator. This is simply another illustration of the slipshod and careless manner of using and operating the apparatus employed by the appellees. No careful operator would ever think of using apparatus in this manner. The statement of counsel that the artificial voltage maintained by appellants is not necessary for their use and that the constant voltage maintained by the appellants is not necessary for their use, is mere quibbling. If the current furnished was never used except by one motor, it might not be necessary to maintain a constant voltage, but the moment that more than one motor is placed upon the circuit, the voltage must be kept constant or the speed of the motors would vary. If the appellee was furnished with a current of varying voltage, it would have to install a Terrell regulator to regulate the voltage, or do, as they did before the Terrell

regulator was invented, employ a man constantly for that purpose. There is no doubt but what appellants could be required, and would be required by a court, to furnish current at a fixed voltage if they were not doing so, for any other current would be entirely useless unless the entire current were used up by one motor.

There is no complaint anywhere in the pleadings or elsewhere that this voltage is not maintained at the standard adopted for that purpose, nor is there anything to prevent the appellee from reducing it or increasing it by means of a transformer if it prefers either an increased or decreased voltage. The contention of appellees that the surges passed with the main current as an incident thereto is entirely without merit, and has no foundation either in reason or authority. Counsel says that if A granted to B a parcel of land in the midst of land owned by A, a right-of-way over lands passed to B with the grant of the parcel itself. This is quite true, but the reason that this right-of-way passed is because A would not be able to get to his land except by crossing B's land, and since the grant was from B a right-of-way would be implied. This would be analogous to saying that since the appellee is required to take the current from and at the generating plant, it has a right of way of necessity over the lands of the appellants lying between the generating plant and appellee's land for the

purpose of stringing wires and placing poles in order that it might reach the place of delivery. But this does not mean that because an expressed current of 300 electrical horse power is granted, an implied current of 300 electric horse power, or 1,500 horse power, passed with the 300 horse power, so that the current granted is not 300 horse power, but 1,800 horse power. Counsel says:

“Assume in the case at bar that the 900 per cent. excess of power testified to by some of the witnesses as sometimes consumed in overcoming the inertia of machinery was necessary to start that of appellee; that is to say, assume that in order to start its machinery appellee must have a current nine times more potential than that required for operation, the result would be that under appellant’s alleged conception of the contract, appellee’s available power would be only $33 \frac{1}{3}$ horse power because as it required nine times this amount to start its machinery, that is, 300 horse power, and as the contract limited the amount to which appellee could in any event be entitled to 300 horse power, it must necessarily follow that appellee must confine its operations to machinery consuming in operation not over $33 \frac{1}{3}$ horse power.”

To assume on the other hand that appellee would be entitled to a starting surge nine times as great as its running current; and that, although the contract provided that it should be entitled to a current not to exceed 300 horse power, it would, nevertheless be entitled to a current of nine times 300 horse power, or

a current of 2,700 horse power, is highly unreasonable. Would it not be more reasonable and equitable to require the appellee to use reasonable, ordinary starting devices or require the appellee to remove its load at the time of starting so that it could start its machinery with the amount of current required to run it and receive a current of 300 horse power and that it operate a motor utilizing such a current in its operation? This is the only fair and reasonable way out of the situation. It is beneficial and just to everyone. It results in making the best use of the current furnished and gives to each party a fair and reasonable proportion of the current generated. The appellee's counsel then direct their attention to the decree itself. We have already discussed this decree, pointed out its objectionable features and its uncertainties. We have shown that the decree on its face is very much more uncertain than the contract which it attempts to construe, and these matters will not again be gone into at this time.

We desire to add, however, a further objection to the decree that was not referred to in our original brief, and it is this: The contract provides that while the current to be furnished is to be an uninterrupted current, the appellants shall not be liable for damages that may arise from operating or other causes beyond their control, that is to say, they shall not be liable because of break downs and shut downs made necessary in order to make repairs and shall not be liable if

the current cannot be generated because of a shortage of water. Nowhere does the decree make any provision to relieve the appellants from the necessity of furnishing current under the conditions mentioned. There is no provision in the decree that the appellants shall be relieved at any time from furnishing current in the event that the water is not sufficient or other conditions made necessary from causes in connection with the operation of the machinery. That the decree is erroneous in this regard must of course be conceded by all.

Just one more word with reference to the wattmeter. The wattmeter is the instrument devised for the purpose of measuring the power actually drawn from the circuit. It does not measure the energy contained in the circuit, and cannot be used to measure current. It does not make any difference whether the wattmeter is placed in appellants' power house or anywhere else on the circuit. It will only record the number of watts actually taken from the circuit at the point where the motor is situated, without reference to where the wattmeter is placed. It does not take into account that portion of the current which has been distorted, nor does it in anywise measure the current circulating in the circuit. It was not designed to measure current, and cannot be used for that purpose. It measures power only, and no power except the power that is drawn from the circuit, that is to say, the power that

is actually developed. To measure a current, as distinguished from the power that is developed, an ammeter and a voltmeter are necessary, or, if the voltage is kept constant, an ammeter alone suffices for that purpose. Upon these matters the testimony is conclusive, and uncontradicted.

Counsel again on page 73 refer to the fact that a time relay circuit breaker is installed on the main trunk line leading from Sheep Creek to appellants' mines, and refers to this as evidence of the fact that appellants' circuit will be protected from incoming peaks if such time relay circuit breaker were installed on appellee's circuit. Not so. It is true that there is a time relay circuit breaker on the main line of the appellants, but it is equally true that in addition to this every branch line is supplied with an instantaneous circuit breaker, so that there is an instantaneous breaker as well as a time relay circuit breaker between each motor and the generating plant. In order to create the same conditions on the appellee's circuit, if a time relay circuit breaker were installed on the generating plant, it would be necessary to install, in addition to this, an instantaneous circuit breaker between the motor and the time relay circuit breaker.

On page 75 of the brief, counsel attempt to quote from a portion of the testimony of the witness Proebstel. In doing so, however, they quote only a part of the testimony of that witness. The witness Proebstel

testified, on page 411, that in order to start a motor of 300 or 400 horse power capacity in appellants' mining plant, it is necessary to get up steam and generate additional current by means of the steam turbines and thus supply the additional current required. Having this apparatus handy, and knowing when the additional current would be required, because the motor to be started was under the appellants' own management, the witness says it was not a serious matter to start the motor. However, he says, in answer to a question of how serious a matter it would be: "It is this serious that under our present operating conditions if one of the motors that I speak of happens to be idle and the steam plant not running, that we take precautions to get one of our 1000 kilowatt generators on our bus before we attempt to start that 400 horse power motor under the conditions I have stated." This explains the testimony which counsel attempted to quote.

That portion of counsel's brief which follows in relation to synchronous motors has already been fully discussed. Counsel then devotes some space to discussing the value of the Sheep Creek power. In this connection we will only say that the property turned in by appellee's predecessor in interest is valued in the contract at \$25,000, and that the contract itself is valued by Mr. Thane in his prospectus at something not less than \$150,000, so that appellees did very well

in executing the contract. And we think it is but fair that since the appellants have, according to the terms of the contract of April 22nd, expended in excess of \$100,000, and are required perpetually to keep the plant in repair and keep it in operation, and in addition to this must furnish the appellee so much of the first current generated as will be a current of 300 horse power, so that for a greater portion of the year appellants get no current at all, and at no time get more than what is left after a current of 300 horse power has been taken, the current generated should be divided as appellants claim. This would give to each a fair proportion in accordance with the original investment of each. If anything, the appellee would get considerably the best of it for it gets the winter power when power is most valuable.

Counsel for appellee then says that there is no evidence of waste. There is this evidence, however, that the motor employed by the appellee distorts 40 per cent. of the current furnished so that that much of the current is wasted and lost. Of this appellants, of course, can make no complaint, but they do contend that the appellee should suffer the result of the waste caused by this, and that appellants should not be burdened with it.

The statement of counsel that a reversal of the decree would result in requiring the establishment of a separate unit is entirely outside of the facts. If the

contention of appellants is sustained, the appellee would get just exactly what it would get from a generator of 300 horse power capacity, nothing more and nothing less.

We believe that this would be fair, just and equitable, would work no hardship to any of the parties, while, on the other hand, the affirmance of the trial Court's decree would result in distorting the entire value of the Sheep Creek plant to appellants and deprive appellants of their entire investment there made.

Referring again to the written contracts which are involved in the controversy in this action, appellee's brief contains the following declaration:

"Certainly no one contends that anything was to be delivered other than current, but the question still remains open as to the quantity or volume of that current" (Appellee's Brief, p. 54).

We believe this declaration to be of controlling importance, because appellee thereby concedes beyond all doubt and question that the contracts referred to, by the express language and agreements of the parties therein contained, were made to provide for, relate to and control the purchase, sale and delivery of *electric current* only. No term or expression of these contracts provides for, purports to control, or relates to any matter of power.

Giving due consideration to this concession, it is clear that appellee (plaintiff below) by this action

did not seek specifically or otherwise to enforce *the contracts of the parties* as they stand, and that the case for appellee is (as we have consistently contended) in effect an action in equity by which plaintiff below applied to the court to *reform* the written contracts involved and thereupon to specifically enforce such contracts according to the terms of their reformation. In other words, the appellee argues that it is entitled to have the written contract so reformed as to entitle it to what it insists it thought it was getting at the time the contract was executed.

This presents the question: Did plaintiff below make a showing of equities sufficient to justify the trial court acting according to the rules of equity in undertaking to reform the written contracts of the parties?

We contend that plaintiff failed to make such a showing of equities.

The general rule to govern cases of the kind is stated to be as follows:

“Reformation is appropriate, when an agreement has been made, or a transaction has been entered into or determined upon, as intended by all the parties interested, but in reducing such agreement or transaction to writing, either through the mistake common to both parties, or through the mistake of the plaintiff accompanied by the fraudulent knowledge and procurement of the defendant, the written instrument fails to express the real agreement or transaction. In such a case

the instrument may be corrected so that it shall truly represent the agreement or transaction actually made or determined upon according to the real purpose and intention of the parties."

2 *Pomeroy Equity Jurisprudence*, §780, p. 1541.

"Equity has jurisdiction to reform written instruments in but two well-defined cases: 1. Where there is a mutual mistake,—that is, where there has been a meeting of minds,—an agreement actually entered into, but the contract, deed, settlement, or other instrument, in its written form, does not express what was really intended by the parties thereto; and 2. Where there has been a mistake of one party accompanied by fraud or other inequitable conduct of the remaining parties. In such cases the instrument may be made to conform to the agreement or transaction entered into according to the intention of the parties."

4 *Pomeroy Equity Jurisprudence*, §1376, p. 2724.

According to these concrete statements of the applicable rules of equity, plaintiff was required to prove that it had been induced to enter into the written contracts involved by reason of *mistake* or by reason of *fraud*.

"If, then, the agreement was not founded in a mistake of any material fact, and if it was executed in strict conformity with itself; we think it would be unprecedented, for a court of equity to decree another security to be given, not only different from that which it had been agreed

upon, but one which had been deliberately considered and rejected by the party now asking for relief; or to treat the case, as if such other security had in fact been agreed upon and executed."

Hunt vs. Rousmaniere, 1 Peters, 1, 13.

"To entitle the plaintiffs to this relief, they must show that the name of Pickrell, as the party of the second part, was inserted, and the name of the railroad company left out of the contract, by mistake or fraud. In such a case, it is well settled that equity would reform the contract, and enforce it, as reformed, if the mistake or fraud were shown."

Baltzer vs. Raleigh & Augusta Railroad, 115 U. S., 634, 645.

"No fraud, however, is suggested, nor is it alleged that a mutual mistake existed on the point in question. One of these allegations is indispensable in a complaint asking for a reformation of the contract."

Story vs. Conger (N. Y.), 93 Am. Dec., 546, 548.

"A court is not authorized to reform a written instrument upon the ground of mistake, unless it is shown by clear and satisfactory evidence that the instrument as written does not express the intention of both of the parties thereto. Unless the mistake was mutual, or was accompanied by fraud, the parties are to be governed by the terms of the instrument as it is executed."

Hochstein vs. Berghauser, 123 Cal., 681, 685.

"The mere fact that the contract was ambiguous, if such were the fact, did not require relief in the nature of reformation. If the proper construction of it—conceding for the point need for construction—would support appellant's claim, while a different construction was essential to respondents' theory, the situation was not one requiring judicial reformation of the writing from either viewpoint. Reformation is proper when, by fraud or mistake, the writing does not discoverably express the contractual intent the parties mutually proposed incorporating into it."

Pedeltz vs. Wisconsin Zinc Co. (Wisconsin),
134 N. W., 356, 357.

"The parties were not acting under a mutual mistake, and, in the absence of proof of fraud, the cross-bill brought by the defendants in the first case, asking to have the contract reformed or delivered up and canceled, must be dismissed."

Chute vs. Quincy, et al. (Mass.), 30 N. E.,
550, 551.

See also

Johnston vs. Jones, 66 U. S., 209, 224;
Ivinson vs. Hutton, 98 U. S., 79, 82;
Snell vs. Insurance Co., 98 U. S., 85, 89;
Walden vs. Skinner, 101 U. S., 577, 583;
Simmons Creek Coal Co. vs. Doran, 142 U. S.,
417, 435;
County vs. Youngstown Bridge Co., 80 Fed.,
10, 17.

The complaint alleges various items of local history

leading up to the time when the contracts involved were negotiated and concluded by the parties.

Having arrived at that point of time it presents statements of which the following is the gist: (See pages 4 and 5 of Record.)

Messrs. Bradley and Taylor being then the fully authorized representatives of defendant companies, represented "that a current of two hundred electric horse power would be an ample current to continuously mine and operate the said mines and mining plants." The mines and mining plants referred to were those then belonging to ~~defendants~~ **PLAINTIFF.**

It is not alleged that the representations above referred to were warranties or anything more than expressions of opinion or that they were untruthful or were wrongfully made. Nothing is alleged to impugn the honesty or good faith of Messrs. Taylor and Bradley in making representations referred to.

FURTHER
The complaint alleges:

"That the representative of the International Trust Company then and there represented to the said Bradley . . . (page 5) that the question of the amount of power which it would be necessary to use continuously in the operation of the International Trust Company's property must be reserved for submission to the said International Trust Company and the parties interested with the International Trust Company in the said properties" (page 5).

The record shows that the defendants thereupon

declined to act upon the alleged representations of Messrs. Taylor and Bradley, but proceeded to act independently, upon the advice of counselors of their own selection and employment, as is shown by the following allegation of their complaint, viz:

“That after taking advice upon the subject, the parties above named decided that they would be in need of the continuous and uninterrupted use of three hundred horse power which would be fully consumed when their operations upon the said properties were resumed; and the said International Trust Company and the parties interested with the International Trust Company notified the said F. W. Bradley that they would be willing to enter into such agreement, provided they were given a continuous and uninterrupted use of three hundred horse power. The said F. W. Bradley, acting for the defendant companies, replied that he would agree to give a continuous current of three hundred horse power in exchange for the property above specifically described, and that thereupon the International Trust Company caused the Oxford Mining Company, a corporation, to be incorporated, and deeded the said property to the Oxford Mining Company for the benefit of the parties interested through the said International Trust Company in the said property; and thereafter the Oxford Mining Company duly executed a lease in the form drawn up and submitted by the said F. W. Bradley at the time the aforesaid representations were so made, with the exception that the words ‘two hundred horse power’ as originally given in said lease were changed, in all instances, to the words ‘three hundred horse power’” (page 5).

The matter above quoted, we think, fully states the transaction of the parties upon which their controversy arises and depends.

It is true that the record also shows much further matter (argumentative and inferential in character) corresponding to contentions of defendant's counsel, but these clearly are mere elaborations of the main fact.

Upon final analysis of everything put forward on the part of plaintiff, its claim appears to be:

1. That defendants were guilty of fraud.
2. That there was a mutual mistake of the parties.

1. *That defendants were guilty of fraud*

Because Messrs. Taylor and Bradley estimated and represented that plaintiff required an electric current of two hundred horse power to operate its plant, and made a proposal to plaintiff accordingly. It is not claimed that plaintiff relied upon or was misled by this estimate and representation. On the contrary the complaint shows that plaintiff declined to accept or rely upon this estimate and representation. Plaintiff took advice independently of defendant and then advisedly made a counter proposal to defendant whereby it offered to enter into the written contract first proposed, if one change and one only were made therein. This one change was to be made by substituting a provision for an electric current of three hundred horse power in place of the provision for an electric current of two hundred horse power contained in the draft of the contract first proposed. De-

fendants accepted this counter proposal and the contracts were concluded accordingly. Where in this transaction was there any fraud?

THERE WAS NO FRAUD.

"With all these varieties of external form, actual fraud in the numberless agreements, transactions, and dealings of mankind may, in its intrinsic nature, be reduced to two essential forms,—false representation and fraudulent concealments,—*suggestio falsi* and *suppressio veri*. The discussion of actual fraud mainly consists, therefore, in analyzing these two forms and in determining their necessary constituents."

2 *Pomeroy*, § 875, p. 1559.

"Constructive fraud is simply a term applied to a great variety of transactions, having little resemblance either in form or in nature, which equity regards as wrongful, to which it attributes the same or similar effects as those which follow from actual fraud, and for which it gives the same or similar relief as that granted in cases of real fraud. It covers different grades of wrong. It embraces contracts illegal, and therefore void at law as well as in equity; transactions voidable in equity because contrary to public policy; and transactions which merely raise a presumption of wrong, and throw upon the party benefited the burden of proving his innocence and the absence of fault.

"§ 923. In the great case of *Chesterfield* vs. *Janssen*, quoted in the preceding Section, Lord Hardwicke, after mentioning actual fraud, added the three other following classes: 1. That apparent

from the intrinsic nature and subject of the bargain itself; 2. That presumed from the circumstances and condition of the immediate parties to the transaction; 3. That which is an imposition on third persons not parties to the transaction."

2 *Pomeroy*, §§ 922 and 923, p. 1662, 1663.

"The burden of proof is on the complainant; and unless he brings evidence sufficient to overcome the natural presumption of fair dealing and honesty, a court of equity will not be justified in setting aside a contract on the ground of fraudulent representations. In order to establish a charge of this character the complainant must show by clear and decisive proof—

"First. That the defendant has made a representation in regard to a material fact;

"Secondly. That such representation is false;

"Thirdly. That such representation was not actually believed by the defendant, on reasonable grounds, to be true;

"Fourthly. That it was made with intent that it should be acted on;

"Fifthly. That it was acted on by complainant to his damage; and,

"Sixthly. That in so acting on it the complainant was ignorant of its falsity, and reasonably believed it to be true."

Southern Development Co. vs. Silva, 125 U. S., 247, 249.

"Fraud, indeed, in the sense of a court of equity properly includes all acts, omissions and concealments which involve a breach of legal or equitable duty, trust, or confidence, justly reposed and are

injurious to another, or by which an undue and unconscientious advantage is taken of another."

Moore vs. Crawford, 130 U. S., 122, 128.

"The general principles applicable to cases of fraudulent representation are well settled. Fraud is never presumed; and where it is alleged the facts sustaining it must be clearly made out. The representation must be in regard to a material fact, must be false and it must be acted upon by the other party in ignorance of its falsity and with a reasonable belief that it was true. It must be the very ground on which the transaction took place, although it is not necessary that it should have been the sole cause, if it were proximate, immediate and material. If the purchaser investigates for himself and nothing is done to prevent his investigation from being as full as he chooses, he cannot say that he relied on the vendor's representations. *Southern Development Company vs. Silvea*, 125 U. S., 247. 'If the party to whom the representations were made,' remarked Lord Langdale, in *Clapham vs. Shillito*, 7 Beavan, 146, 149, 'himself resorted to the proper means of verification, before he entered into the contract, it may appear that he relied on the result of his own investigation and inquiry, and not upon the representations made to him by the other party; or if the means of investigation and verification be at hand, and the attention of the party receiving the representations be drawn to them, the circumstances of the case may be such, as to make it incumbent on a court of justice to impute to him a knowledge of the result, which, upon due inquiry, he ought to have obtained, and thus the notion of reliance

on the representations made to him may be excluded."

Farrer vs. Churchill, 135 U. S., 609, 615.

"In order to justify a recovery for fraud, it must be shown by proof that the plaintiff's agent relied upon the alleged false representations, and made them the ground and basis of his report, but *that he was so circumstanced as to justify him in so relying upon and placing confidence in said representations*; and if it appears that he had other knowledge, or had received other representations and statements, conflicting therewith, sufficient to raise reasonable doubts as to the correctness of such representations, then there can be no recovery on the first count."

Stewart vs. Wyoming Rancho Co., 128 U. S., 383, 387.

2. *That there was a mutual mistake of the parties.*

A. Because their contract should have provided for mechanical horse power developed at plaintiff's operating plant instead of electric current developed at defendant's generating plant, and

B. Because the written contract should have provided for such starting surges as plaintiff's plant (situated and equipped and circumstanced as it was) made necessary.

THERE WAS NO MISTAKE.

No mistake is shown in the complaint; and before a court of equity can grant relief, the facts relative to the mistake must be pleaded sufficiently.

"Our understanding, however, of the clearness

and certainty of allegation and proof necessary to sustain a suit for reformation of a written instrument is that it must be sufficient to satisfy the mind that the contract as written is not the contract intended by the parties, and that the error or deficiency therein is the result of a mutual mistake of law or fact on the part of the parties to such contract. Does this petition meet that requirement?"

Straus vs. Monitor Specialty Co. (Nebraska),
131 N. W., 193, 194.

"In order to accomplish this result, however, the petition must be adequate for both purposes: First, to reform the instrument; second, to obtain judgment on it."

Delaware Ins. Co. vs. Pennsylvania Ins. Co.
(Georgia), 55 S. E., 330, 332.

"It follows, then, that, in order that a court of chancery may know whether the mistake complained of is such as calls for equitable interposition, it is necessary that the bill should 'state with precision the facts constituting' the mistake, and going to show whether it occurred without negligence on the part of the party complaining."

Pearson vs. Dancy, 39 So., 474, 479.

"A bill to reform and correct an erroneous settlement must be directed specifically to that end; must allege the mistakes distinctly and particularly, for the reason that 'jurisdiction for the correction of mistakes is exercised only in order that the real intention of the parties may be carried out; and if

the particulars wherein there has been a failure to express correctly the intention of the parties are not pointed out, the court will have nothing to guide it in making the correction. The fact that the expression 'by mistake' is interspersed through the pleading will not be sufficient to invoke the aid of equity, where the particular circumstances constituting the mistake are not alleged."

Batson vs. Findley (West Virginia), 43 S. E., 142, 147.

There was no mistake. Where mistake is asserted, it must appear that the mistake was mutual, otherwise there would be no contract which the Court could adopt as the contract mutually intended by the parties.

"Mistake on the other hand, is internal; it is a mental condition, a conception, a conviction of the understanding,—erroneous, indeed, but none the less a conviction,—which influences the will and leads to some outward physical manifestation. Its operation is ordinarily, though not always, affirmative—the doing of some act which would not have been done in the absence of the particular conception or conviction which influenced the free action of the will. Its essential prerequisite is ignorance. It is distinguished from fraud, fraudulent representations, or fraudulent concealments by the absence of knowledge and intention, which in legal fraud are actually present, and in constructive fraud are theoretically present, as necessary elements. . . .

"I add the two following definitions, which originally appeared in the proposed Civil Code of New York, and were thence adopted by the existing

Civil Code of California, because they embody the essential notions which I have attempted to explain and are both accurate and comprehensive: 'Mistake of fact is a mistake not caused by the neglect of a legal duty on the part of the person making the mistake, and consisting in,—1. An unconscious ignorance or forgetfulness of a fact, past or present, material to the contract; or 2. Belief in the present existence of a thing material to the contract which does not exist, or in the past existence of such a thing which has not existed.'"

2 *Pomeroy*, §839, pp. 1475, 1476.

"The mistake must be mutual and common to both parties to the instrument. It must appear that both have done what neither intended. A mistake on one side may be a ground for rescinding, but not for reforming, a contract. Where the minds of the parties have not met there is no contract, and hence none to be rectified."

Hearne vs. Marine Insurance Co., 87 U. S., 488, 490.

"The jurisdiction of equity to reform written instruments, *where there is a mutual mistake, or mistake on one side and fraud or inequitable conduct on the other, is undoubted.*"

Simmons Creek Coal Co. vs. Doran, 142 U. S., 417, 435.

"Reformation of a contract will not be granted by a court of equity unless there has been a mistake which is mutual and common to both parties

to the instrument. It must appear that both have done what neither intended."

Grieb vs. Equitable Life Assurance Society,
189 Fed., 498, 501.

"The mistake which will warrant the reformation of a contract must be a *mutual mistake*. A court of equity may not reform a written agreement, on the ground of mistake, so as to impose on one of its parties obligations which he did not intend to assume when he made it."

New York Life vs. M'Master, 87 Fed., 63, 68;
Writ of certiorari denied, 171 U. S., 687.

"It is a well-settled rule that in the absence of fraud the court cannot make any change in, nor direct the reformation, of a contract, unless the proof be clear that by reason of a mutual mistake the real intention of the parties has not been expressed (*Pope vs. Hoopes*, 33 C. C. A., 595, 90 Fed., 451), and that the burden of proof to show an intent contrary to that expressed in the agreement rests on the complainant (*Harrison vs. Insurance Co.* (C. C.), 30 Fed., 863). The mistake must have been a mutual one, and the intent which the agreement fails to express must have been the intent of both parties at the time of execution. Not only must the mistake be uncontrovertibly proved, but the party alleging it must be able to show the form to which the agreement should be brought, in order that it may be set right according to what was intended by the parties."

Fulton vs. Calwell, 110 Fed., 54, 56.

"Equity may grant relief from a mistake in a contract where there is fraud *or the mistake is mutual.*"

Texas Cent. Ry. Co. vs. Kerns (Texas), 108 S. W., 185, 187.

"The mistake must exist in the agreement and be mutual—that is, by the mutual mistake of all the parties the instrument as written does not fulfill the manifest intention of the parties and does not conform to the agreement as made.

"(4) It must be a mistake in omitting something which the parties intended inserting, or something which was a part of the agreement and which it was supposed was contained in the writing when it was signed and delivered. It must not be a mistake of judgment in that one party relied upon performance by the other of the provision omitted, instead of insisting upon its being reduced to writing and put in the written instrument. If the instrument is executed in conformity with the agreement as to the terms that were to be incorporated, in it, then there is no mistake, and, if it is in conformity with the intention of one of the parties, then there is no mutual mistake."

Doniphan R. Co. vs. Missouri & N. A. R. Co. (Arkansas), 149 S. W., 60, 63.

See

4 *Pomeroy Equity Jurisprudence*, §1376, p. 2724.

We think this Court, upon consideration of the record, should direct a dismissal herein for want of equity.

Respectfully submitted.

United States
Circuit Court of Appeals
For the Ninth Circuit.

ALASKA TREADWELL GOLD MINING COM-
PANY, a Corporation; ALASKA UNITED
GOLD MINING COMPANY, a Corporation;
ALASKA MEXICAN GOLD MINING
COMPANY, a Corporation; and ROBERT A.
KINZIE,

Appellants,

vs.

ALASKA GASTINEAU MINING COMPANY, a
Corporation,

Appellee.

Brief of Appellee.

SHACKLEFORD & BAYLESS,
Attorneys for Appellee.

ALBERT FINK and Z. R. CHENY,
Of Counsel.

FILED

OCT 15 1913

*In the United States Circuit Court of Appeals for
the Ninth Circuit.*

ALASKA TREADWELL GOLD MINING COM-
PANY, a Corporation; ALASKA UNITED
GOLD MINING COMPANY, a Corporation;
ALASKA MEXICAN GOLD MINING
COMPANY, a Corporation; and ROBERT
A. KINZIE,

Appellants,

vs.

ALASKA GASTINEAU MINING COMPANY, a
Corporation,

Appellee.

Brief of Appellee.
INTRODUCTORY.

In the fall of 1909 the appellants in this case entered into a contract with the predecessor in interest of the appellee, providing for the conveyance to the appellants of a valuable water right and power plant situated at the mouth of Sheep Creek, near Juneau, Alaska. In exchange for this property the appellants agreed to furnish to the predecessor in interest of the appellee, out of a new 300 horse-power plant to be (and which was thereafter) constructed upon the property so obtained by them.

To use the words of Mr. F. W. Bradley, then the consulting engineer (now the president) of the appellants, this contract was made "for the purpose of adding value to the Sheep Creek mines" (then owned by the predecessor in interest of the appellee). (See letter from Bradley to Shackleford, Tr., page 359.)

In July, 1912, while this contract was of record, Mr. D. C. Jackling, a mining engineer of wide experience, was attracted to the property (see Tr., page 121), and upon an examination of the same it was financed and the expenditure of \$4,500,000 was planned and the money raised for the development of this mine and adjoining property. A program was adopted for the purpose of driving a tunnel underneath the ore body, for increasing and multiplying the working faces in the ore body, for producing the necessary arteries and completing the necessary stopes, so that at the end of two and one-half years 6,000 tons of ore per day could be drawn from the property so developed, and poured into the rock-crushers of a 6,000-ton per day milling plant, the construction of which was to be completed at the same time, and the money was secured and an interest burden placed upon the property, dependent upon the timely completion of every detail in the underground development, so that the mill and the mine would both be ready at the same time and there would be no delay in placing the mine upon a producing basis. (See testimony of Thane, Tr., pages 120 to 125.)

Expert miners were brought out from Michigan for the purpose of expediting the work. (See Tr., page 125.)

Resting upon the assurance that the appellants would keep their contract in good faith, the Sheep Creek Mines and the contract for furnishing the 300 H. P. involved in this case were purchased by Mr. Jackling and his associates. In the community in question there was no other available power, nor

were there any producers from whom power could be obtained. (See Tr., page 265.)

As soon as the appellee got well started to work a construction of the contract in question was adopted by the appellants, which would have delayed the program of the appellee almost indefinitely. (See Tr., pages 121 to 125.) After Christmas Day, 1912, and until the Trial Court acted in the premises, the appellee was completely deprived of all power under the contract. This action on the part of the appellants seemed to have been induced by that delicate sense of hospitality which sometimes becomes apparent when a new mining concern comes into the field where an old one has been in operation for a long time before. It will be seen further on that the matters in dispute over the construction of this contract were so petty that they should have been settled out of court.

NECESSITY OF AN EARLY DECISION IN CASE AT BAR.

A decree was rendered June 12, 1913, in this cause in favor of the appellee, commanding the delivery of the 300 H. P. in question. (See Tr., pages 1092 to 1095.)

The Judge who tried this case did not grant a supersedeas from this decree, but a Judge who was unacquainted with the issues in the case subsequently granted a writ of supersedeas. (See Tr., pages 1170 to 1172.) Later the Court deeming that an emergency existed for the speedy disposition of the case, so that the appellee would not be deprived of power if they were entitled thereto during the winter of

1913, ordered that this cause be taken to the Circuit Court of Appeals for the Ninth Circuit, at Seattle, and further ordered that the record be made up with necessary speed to accomplish that purpose. The Clerk of the lower court was unable to certify the record in time to get it printed for the Seattle term, and accordingly the case was continued to the October term, 1913, at San Francisco, and set for trial on the first day of the session. (See Tr., pages 1211 and 1212.)

If the decision of the lower court is correct, the appellee in this case will be deprived by this supersedeas of a little less than a third of the power to which they are entitled during the ensuing winter, unless this case may be decided before the adjournment of the October session. During the winter months additional power cannot be obtained from any source whatever, except from the appellants, under the contract in question.

STATEMENT OF CASE.

The findings in the case state factors as they are.

Findings Nos. 1 and 2 find the corporate existence of the respective parties, appellants and appellee. The Court then proceeds to find that in the month of August, 1909, the predecessor in interest of the appellee was in possession and control of a property described in the contract hereinafter referred to, including a certain water-power plant at the mouth of Sheep Creek (see Tr., page 1055), and that the said water-power plant had installed a generating equipment for 370 H. P., in electrical apparatus and compressors. (See Tr., page 1055; also see testimony of

H. L. Wallenberg, Tr., pages 242 and 243; also testimony of H. A. Bishop, Tr., page 251.) This water-power plant had been used for the purpose of furnishing power to what is known as the Sheep Creek mines, which were claimed by the predecessor in interest of the appellee, and that the operation of the mines required not less than 260 actual H. P. in uninterrupted use, exclusive of any surges necessary to start its machinery. (See Tr., page 1055; also testimony of H. L. Wallenberg, Tr., page 243.)

Prior to August, 1909, the power plant had actually been used by predecessors of the appellee, for the purpose of operating the Sheep Creek mines, which were provided with railways, trams, compressors, lighting plant, two rock-crushers, one 30-stamp mill and other ordinary appliances used in connection with operation of mining. (See Tr., page 1056.)

(It is interesting to note that one of the pieces of machinery connected with this water-power was a duplex compressor, and that after the appellants obtained possession of this plant they moved this compressor to a tunnel on Gold Creek and tried to use 150 H. P. motor, but found the same too small to run the compressor, and ordered an induction motor of 200 H. P. to operate the compressor.) (See Tr., page 398. See, also, testimony of R. A. Kenzie, manager of appellants, Tr., page 527.)

(It is to be noted, also, that under ordinary conditions this motor would consume on the instant of starting over 400 H. P.) (Tr., page 527.)

Prior to the month of August, 1909, the predecessor

sor in interest of appellee was also in possession of a number of other mining claims, near Juneau, described in the Fifth Finding. (See Tr., page 1057.)

In the month of August, 1909, F. W. Bradley, then consulting engineer of the appellants, approached L. P. Shackleford, who was at that time the attorney for the predecessor in interest of appellee, and also attorney for the appellants, and stated that it was the desire of the appellants to secure the possession and control of said Sheep Creek power plant, and the mill sites upon which the same was situated, and construct thereon a plant of substantial size and efficiency for producing about 3,000 H. P., stating that it was the desire of the appellants to furnish to the predecessor in interest of the appellee, and its successors, sufficient power to operate the mines claimed by the predecessor in interest of the appellee, receive in exchange therefor a deed for the Sheep Creek power plant and mill sites. (See Finding 6, Tr., page 1058. See, also, testimony of L. P. Shackleford, Tr., pages 99 to 105.) At this time Mr. Bradley called the arrangement which he desired to effect for appellants, a "flood-water agreement." (See Tr., page 103.) At the same time Mr. Bradley made the statement to L. P. Shackleford that the Sheep Creek power plant had a producing capacity of 150 H. P., but that 200 H. P. would be ample with which to operate the Sheep Creek mines, and would make "good measure." (See letter of Bradley, Tr., page 108.) It is to be noted that Mr. Bradley was most seriously misinformed at the time he made this statement, for the undisputed testimony, heretofore

referred to, shows that the previous capacity of the water-power plant was 380 H. P., and that the most economical requirement of the plant was 260 H. P. (See Tr., page 243.) A draft identical with the agreement which was subsequently signed (except the agreement as originally drawn contained the words "200 H. P.," and the agreement subsequently signed contained the words "300 H. P." instead) was drawn up and transmitted, in person, through L. P. Shackleford, to the then owners of the plant in Boston, accompanied by the following letter written by F. W. Bradley:

"Treadwell, Alaska, August 10, 1909.

Henry Endicott, Esq.,

101 Tremont Street,

Boston, Mass.

Dear Sir:

We have been talking to Mr L. P. Shackleford about your water right on Sheep Creek in this district and both me and ourselves have agreed upon what we consider an extremely fair proposition our concession have been drawn upon the shape of a document which Mr. Shackleford will present to you as it is now this sheep creek water power is in jeopardy and can be taken at any time by adverse interests our proposed arrangement will preserve your rights while at the same time developing them and making the most use of them. I presume you are holding this water right for the value that it has had and may have in the future for working the sheep creek mines and thirty stamp mill connected therewith estimating conservatively 150 H. P. is all the power these

mines and mills ever required for their past operations. The mill is amply large enough for the mine and surely two hundred H. P. will more than take care of future requirements if the proposition is at all acceptable to you we would begin immediate work thereby preserving your rights and returning you some monthly income. The proposition provides ample time in which you could decide either to sell the property outright or take two hundred H. P. for the operation of the mines and mill, yours very truly,

F. W. BRADLEY."

(See, also, testimony of L. P. Shackleford, Tr., page 108. See, also, testimony of F. W. Bradley, Tr., page 652.)

Upon presentation of this letter and agreement a consultation was had with B. L. Thane, as to the amount of power needed for continuous operation, exclusive of any starting surges. It was determined by the Boston owners that they would need in continuous use 300 H. P. for the operation of the Sheep Creek mine (see testimony of L. P. Shackleford, Tr., pages 107-111 and 112. See, also, testimony of B. L. Thane, Tr., pages 117 and 118); and thereupon the following telegram was sent to F. W. Bradley:

"Boston, August 23, 1909.

F. W. Bradley,

Wardner, Idaho.

Will lease power on terms proposed subject to consent trust company if three hundred horse power is substituted for two hundred.

HENRY ENDICOTT."

And thereafter Bradley replied to said telegram as follows:

“Henry Endicott,

You may substitute three hundred for two hundred horse power may I cable Sup’t Kinzie to begin immediate protection measure.

F. W. BRADLEY.”

Thereafter the owners of the Sheep Creek power plant and mill sites made and executed the agreement in controversy in this case, which, omitting the signatures and acknowledgments, is in words and figures as follows, to wit:

“THIS INDENTURE AND AGREEMENT made and entered into this 14th day of October, 1909, by and between Oxford Mining Company hereinafter called the lessor and the Alaska Treadwell Gold Mining Company, the Alaska Mexican Gold Mining Company and the Alaska United Gold Mining Company hereinafter called the lessees.

WITNESSETH.

First, the lessor has this date and does by these presents lease unto the lessees all of the following described real property situated on and near Sheep Creek in the Harris Mining District, District of Alaska, to-wit:

The Mexico Mill-site U. S. Mineral Entry No. 25 lot 71 B. The Belvedere Mill-site U. S. Mineral Entry No. 25, lot 72 B. The Jumbo Mill-site U. S Mineral Entry No. 60, lot No. 260. Also that certain piece or parcel of land beginning at a stake identical with post No. 2 Jumbo Mill-site U. S.

Survey No. 260 on the meander line of Gastineau Channel; thence first course along the meander line of Gastineau Channel at ordinary high water mark N. $52^{\circ} 00'$ W. 54 feet to stake No. 2; thence second course N. $48 15'$ E. 200 feet to stake No. 3; then S. $52.00'$ E. 54 feet to the N.W. side line of Jumbo Mill-site U. S. Survey No. 260, 200 feet to stake No. 1, the place of beginning containing an area of one quarter of an acre more or less, courses expressed from the true meridian, Mag. Var. $29.30'$; and also that certain water right known as the Sheep Creek Water Right and located on Sheep Creek about three quarters of a mile from its mouth, together with the flume and pipeline connecting the same with the beach near the Mill at the mouth of the said Sheep Creek, also the saw-mill, boarding-house, lumber-sheds, wharf landing, mill dam, flumes, penstocks, water-wheels, and all other machinery and appliances used in connection with said saw mill, situated near the mouth of said Sheep Creek, together with all machinery, tools, equipment, plants of every kind and description now upon said property for a term of ten (10) years from the date hereof at a monthly rental of One Hundred and Twenty-five (\$125.00) Dollars per month payable in gold coin of the United States on the first day of each month during the term of said lease at the office of the lessees at Treadwell, Alaska; and it is hereby agreed, that if any rent shall be due and unpaid, or if default shall be made in any of the covenants herein contained, that it shall be lawful for the lessor to re-enter said

premises and remove all persons therefrom, and the lessees do hereby covenant, promise and agree to pay the lessor the said rent in the manner hereinbefore specified, and not to let or underlet the whole or any part of said premises without a written consent of the lessor, not to assign this lease or any part thereof without said written consent, and at the expiration of said term the party of the second part will quit and surrender said premises in as good state and condition as the same now are.

It is the intention of the lessees to erect, equip and maintain upon said premises a water power plant of substantial size and efficiency for the generation of electric power, and if at any times after Two (2) years from the date hereof the lessor or its assigns shall elect to take a current of not to exceed three hundred (300) electric horse-power, which shall be taken from and at the generating plant to be installed upon the leased premises hereinbefore described, the lessees undertake, covenant and agree to deliver said current to the lessor or its assigns upon the execution and delivery by the lessor or its assigns to the lessee of a deed or deeds conveying said leased property herein described to the parties of the second part. If prior to the expiration of nine years from the date hereof the lessor does not elect to convey to lessees or their assigns the property herein, leased and accept in full consideration therefor the right to the use of the three-hundred (300) electric horsepower hereinbefore mentioned, the lessees may at their option prior to the expiration of the ten (10) years pro-

vided in this lease purchase the property herein leased absolutely from the lessor by paying to the lessor the sum of Twenty-five Thousand Dollars (\$25,000) in gold coin of the United States; and the lessor covenants and agrees upon tender of said sum of Twenty-five Thousand Dollars (\$25,000) to execute and deliver such deeds of conveyance to the property herein leased as hereinbefore specified, excepting only as to the title to (1) the one quarter acre tract hereinbefore described and (2) the premises occupied and used by the existing wharf of the lessor to both of which the lessor now asserts only possessory titles. The lessees may at their own cost and expense undertake to perfect the said titles and should lessee wish so to do the lessor shall lend all proper assistance in its power including the using of its name, and should the said titles be so perfected to the said premises or either of them, they shall become the property of the lessor and remain covered by this lease and subject to all the terms and conditions thereof.

The covenants herein contained shall be construed as running with the land and as a charge thereon, so that any successor or successors in interest to the lessor and or lessees who may acquire any interest in and to the titles to the said land shall be bound by this conveyance in the same manner as if they had executed this agreement; and the lessees hereof may require at their option that the property herein described be conveyed by the lessor to a responsible Trustee for the purpose of carrying out the terms of this agreement, or that

deeds and conveyances covering the property herein leased be placed in escrow so as to insure delivery of the same if required under the provisions of any of the covenants of this lease.

If neither of the options herein provided for are accepted by either the lessor or the lessees, then the property and rights herein described with all the improvements that are or that may be hereafter placed on the said premises shall be and become the property of the lessor.

The provisions herein as to the delivery of three hundred (300) horse-power at the generating plant to be installed on the premises herein described contemplates the delivery of an uninterrupted current, but the lessees shall not be liable for damages that may arise from operating and physical causes beyond its control.

IN WITNESS WHEREOF, the parties hereto have hereunto set their names and seals the day and year first above written."

(See Tr., pages 1062 to 1066.)

The Court further found (see Tr., page 1070):

From the surrounding circumstances and from the face of the contract, it was the intention of the appellants to provide, and for the predecessor in interest of the appellee to receive, the beneficial and uninterrupted use of 300 actual H. P., including such starting surges and other conditions as would reasonably insure to the Oxford Mining Company, and its successors, the right to use 300 actual H. P., in connection with the ordinary machinery used in mining, and the ordinary forms of induction motors

in common use in mining on loads of 300 H. P. or less. (See Tr., page 1070.)

The Court further found for loads of 300 H. P. or less induction motors having inherent phase displacement and power factor of less than unity were in ordinary and practical use in mining. The use of said ordinary and practical mining machinery was contemplated by the appellants at the time of the execution of this contract. The power contract was for 300 actual H. P. distinguished from 300 apparent H. P., and that the contract contemplated a beneficial use of 300 actual H. P., as ordinarily spoken of and ordinarily measured by common and ordinary instruments for the measurements of horsepower. (Tr., page 1070.)

This finding is supported, first, by the testimony of the appellants' chief electrician; second, by the testimony of R. A. Kenzie, manager of the appellant company, wherein they both testify that they have nothing but induction motors in the service of their own companies in this mining district at the present time, and that the only other kind of motors they have ordered are synchronous motors for loads of 450 H. P. or more, which have not yet been supplied. The testimony is supported, also, by the depositions given in behalf of the appellants. (See testimony of Wm. Davis, Jr., engineer for the Pacific Coast for The General Electric Company, in answer to cross-interrogatory No. 4, which is as follows:

Q. "Where have you seen a synchronous motor in use upon a 3-phase alternating current for a load not to exceed 300 H. P.?"

A. "I have not seen more than 3 or 4 of these synchronous motors at the Schenectady works of the General Electric Company."

(See Tr., page 863.)

(See testimony of Carl E. Heise, superintendent of the Westinghouse Company, for appellants, Tr., page 933, where he says that he has never seen a synchronous motor of as small a capacity as 300 H. P. in commercial use.)

The testimony of the witnesses for the appellants on the subject was that induction motors of the type used by the appellee, and not synchronous motors, were in common, ordinary and general use for mining purposes at the time the contract was executed and ever since. (See Tr., pages 396-514 and 515.)

The Court further found that the common and ordinary instrument and device in constant and universal use for the measurement of horse-power was the wattmeter. (See Tr., page 1071.) This finding, we believe, is supported by the testimony of every witness examined in the case. (See opinion of Court, Tr., page 1204.)

(See answer to cross-interrogatory of Prof. C. L. Cory, Tr., page 826.)

(See Tr., testimony of Wm. J. Davis, Jr., page 863.)

(See testimony of A. M. Hunt, Tr., pages 897 and 898.)

(See testimony of Carl E. Heise, Tr., page 933.)

(See testimony of E. A. Quinn, Tr., page 968.)

(See testimony of E. W. Proebstill, chief electrician for appellants, Tr., page 426.)

(See testimony of W. S. Pullen, Tr., page 212.)

(See testimony of H. L. Wallenberg, Tr., page 274.)

In this connection it is to be observed, also, when the appellants started to comply with the contract in question they ordered a curve-drawing wattmeter for the switch-board, which was to make the connection for the appellee's circuit. (See Tr., pages 387 and 388.)

The Court further found that in making the contract the Oxford Mining Company relied and had a right to rely on the representation made by the appellants, to the effect that it was the purpose of the appellants to furnish the amount of power stipulated in the contract, for real, actual and working efficiency, together with such momentary surges necessary to start the machinery of the Oxford Mining Company, or its successors; and to give to the Oxford Mining Company, or its successors, the uninterrupted use of 300 real H. P., to be used in connection with ordinary motors commonly used upon loads of 300 H. P. or less, including induction motors. (See Tr., page 1071.)

The Seventh Finding is to the effect that on the 31st of October, 1910, the Oxford Mining Company elected to take the 300 H. P., and conveyed the property described in the contract, before mentioned, pursuant to the terms thereof, on the 22d of April, 1911. This finding is undisputed and supported by the allegations of the answer wherein the deed is

set forth by the appellants (see Tr., page 64), and the Court further found, from the 22d of April, 1911, until the 8th of November, 1912, the Oxford Mining Company, or any of its successors, did not receive any power contracted for from the appellants. (This latter finding is supported by the evidence to the effect that the power was not turned on until the 8th of November, 1912. No claim is made by the appellees that the power was demanded until shortly before the 8th of November, but the finding was requested and made as a showing of one of the outside equities of the case, to wit, that the appellants had had the benefit of the 300 H. P. for more than a year and a half, without paying anything therefor, and that it was therefore unequitable for them to deprive the appellee of momentary starting surges of from 5 to 30 seconds, occurring once or twice a month, the value of which—as computed by the various witnesses, on the basis of \$87.00 per horse-power—would be 5¢ for each surge.)

The Ninth Finding (see Tr., page 1075) finds that the Oxford Mining Company sold its property and property rights to the appellee, which is an admitted fact.

The Ninth and Tenth Findings proceed to set forth that the appellee is engaged in developing its mines in Sheep Creek and Silver Bow Basin, both from the Sheep Creek and Silver Bow Basin side, and is pushing its development work as rapidly as possible, and the prosecution of the development work involves a speedy application of power available to the appellee company. That if the appellee is de-

prived of said power the progress will be greatly delayed, and interest burden upon its bonds and other expenses will be greatly increased; that there is no other source of power for carrying on the appellee's development work, and that damage to the appellee cannot be compensated at law. (See Tr., page 1076.)

The Court further found that arrangements for the development of the appellee mining company were made in reliance on the contract of the appellants that they were to furnish an uninterrupted current of 300 H. P. for the actual and practical use of the appellees, and that relying upon said contract the appellees engaged a force of over 175 men to perform its underground development work, at a daily expense of \$750.00, and that there was outstanding some \$3,500,000 bonds of the appellee, upon which interest is accumulating, and that no interest could be paid until development work of the appellee is completed; that the deprivation of the appellee of the power so contracted for would greatly delay the day when the mines of the company would become productive, and would cause the appellee company to discharge a number of its laborers; that it would be difficult to secure laborers on the resumption of appellee's work unless the same was kept up continuously. All of the above findings are fully supported by the testimony of Mr. B. L. Thane, manager of the appellee, and are uncontradicted. (See Tr., pages, 119 to 128.)

Finding Eleven (Tr., page 1077) sets forth that prior to November 12th, the appellants were notified of the assignment by the Oxford Mining Company

to the appellees, and were requested to deliver the uninterrupted current of 300 H. P. for the use of the appellees, and that prior to the 8th of November, 1911, there had been installed upon the property of the appellees, in Silver Bow Basin, at its Perseverance Mine, a 200 H. P. motor of the usual type in mining operations of like character throughout the United States and Juneau Mining District, and that the motor was connected with a compressor, and that at the Sheep Creek plant there was installed a 150 H. P. motor and 20 H. P. motor, in connection with the compressor, for the purpose of driving an adit tunnel from the Sheep Creek mines to a place underneath the Ground Hog and Perseverance Mines. (In this connection it is to be remembered that the appellees operated a small gas engine for auxiliary purposes.)

The foregoing findings are fully supported by the testimony of B. L. Thane, manager of the appellees. (See Tr., page 128. See, also, testimony of H. L. Wallenberg, engineer for appellees, Tr., page 247.) And by the admission of all of the appellants' witnesses, that at the time suit was instituted there were no motors in the Juneau Mining District excepting induction motors. That on the 8th of November, 1911, the appellants had connected their power plant with the transmission line of the appellees, and had set in their power-house an automatic circuit-breaker, which circuit-breaker was set so as to break the circuit on a maximum of 80 to 100 amperes. (This is one of the most important findings in the case, for the reason that it shows the practical construction

put upon the contract at the time the appellants first attempted to comply with it. According to the testimony of H. L. Wallenberg, the circuit-breaker of the appellants should have been set at about 80 amperes, so as to give the appellee 300 H. P., and he testified that this was the amount that could be drawn from the Sheep Creek plant when the current was originally turned on. (See Tr., page 267.) Witness Proebstill, the engineer for the appellants, testified that about the 3d of December, 1911, the circuit-breaker was set at 100 amperes, and that he proceeded to reduce the setting so that the circuit would be broken when more than 56 amperes were being drawn. He admitted that this change was made without taking the wattmeter readings on the circuit, and that this was done pursuant to orders, and that he had been instructed to construe the contract in that way. (See Tr., pages 389 to 390.) He also admitted that a wattmeter would show that under the setting of 56 amperes the appellee was getting only 210 H. P. (See Tr., page 389.) This, taken together with the fact that the appellants ordered a curve drawing wattmeter for measuring on the circuit of the appellee (see Tr., pages 387 to 388), we claim shows that the original and practical construction of the contract—by the appellants—was that the appellee was entitled to exactly the amount of power which the appellee is now claiming. The findings proceed to show that the current was used by the appellees without any difficulty, and that on the 6th of December, 1912, Proebstill, electrician for the appellants, visited the Sheep Creek power-house

and reduced the setting of the circuit-breaker to a point which would throw the same out and break the current when more than 60 amperes were being drawn through the circuit. (See Tr., page 1079.) The findings further show that the voltage of the circuit amounted to about 300 volts. The Court then finds that the circuit-breaker is not of the usual or ordinary type used upon feeders leaving a power-house, and that the usual and ordinary type of circuit-breaker placed upon feeders, leaving direct from the power-house, is what is known as a thirty-second time relay circuit-breaker, which guards against the circuit-breaker being thrown out momentarily by unavoidable surges of current. (See testimony of H. L. Wallenberg, pages 268 to 269, together with quotation from Foster's Electrical Handbook, reading as follows: "For feeders at the power stations overload inverse time element relays are desirable." See testimony B. L. Thane, Tr., pages 130 and 131.) It is interesting to note that the testimony mentioned shows that on their own line, leaving the Sheep Creek power-house, the appellants maintained a time relay circuit-breaker. (See Appellants' Exhibit No. 7, Tr., page 991.) They also maintained a wattmeter, and maintained no instrument except an instantaneous circuit-breaker and an ammeter on the appellees' line, leaving the power-house. (See Tr., page 991.)

The following witnesses also testified that a time relay circuit-breaker was the proper instrument to maintain upon the lines leaving the power-house.

(See testimony of George E. Quinnan, Operating Superintendent, Puget Sound Traction, Light & Power Company, Seattle, Washington, Tr., page 607.)

(See testimony of W. J. Grambs, Superintendent, Puget Sound Traction, Light & Power Company, Seattle, Tr., page 618.)

(See testimony of H. B. Dunn, Contracting Agent, Puget Sound Traction, Light & Power Company, Seattle, Tr., page 626.)

The Court then proceeds to find that the starting of machinery which will consume a given amount of power often causes what is known as a starting surge, which lasts from ten to thirty seconds, but from a practical standpoint is not taken into account or charged for in electrical connections, and is disregarded and provided against by the use of the ordinary type of time relay circuit-breakers. This testimony is supported by depositions of disinterested electrical experts and practical electricians as follows:

See testimony of George E. Quinnan, Tr., page 606.

See testimony of W. J. Grambs, Tr., page 617.

See testimony of H. B. Dunn, Tr., page 625. He has charge of the contracting department of the Puget Sound Traction, Light & Power Company, Seattle, Washington.

Mr. Dunn says: "In executing contracts it has been my custom to take the reading capacity of motors as a total load and allow for starting surge; I

have never executed a contract where peaks of less than three minutes have been taken in consideration in determining the load.”

The Court further found, in this connection, that in the Juneau Mining District it was not customary for the appellants to charge any other customer for or disallow to them any necessary starting surges, but the power is measured under normal conditions,—that is to say, the amount of power is measured after the machinery is started and in operation. This finding is supported by the testimony of the appellants’ two principal witnesses.

(See testimony of Mr. Proebstill, the Chief Electrician, Tr., page 407.)

(See testimony of Mr. R. A. Kinzie, the General Superintendent, Tr., page 536.)

Both of these gentlemen testified that no charge was made whatever for the starting surge upon the Alaska Juneau circuit; the Alaska Juneau Company being the only customer of the appellants other than appellees, and the Alaska Juneau circuit being a circuit of approximately 300 H. P. (See Tr., page 536.)

The Court further finds (see Tr., page 1981) that in establishing a circuit between the appellee and the appellants, the appellants set their instantaneous circuit-breaker upon a theoretical basis of what is known as unity power factor. The appellants have not installed a wattmeter upon the appellee’s circuit, nor set the circuit-breaker upon observations taken from an ammeter and other meters, such as volt meters, at the time when the wattmeter indicates a consumption of 300 H. P.

The Court further found that there was no circuit from the power lines of appellants, either in connection with the appellee or any of their other lines, where the power factor was unity or 100%. (See testimony of appellant's engineer, Tr., page 396.)

The Court further found that at the present time there are no motors other than induction motors used in connection with the power plant of the appellants. (Tr. 413.)

The Court further found that whenever an induction motor is used the power factor is less than unity, and the actual and effective horse-power passing over any circuit, under such conditions, can only be measured by a wattmeter and the circuit-breakers set upon such circuits in accordance with observations taken from a wattmeter. (Tr., pages 396 to 421.)

The Court further found in the summer of 1912, the appellants ordered a curve-drawing wattmeter to be placed on the switch-board of the circuit between the appellees and the appellants, and that the same is in possession of the appellants, but that the appellants have not installed the same. (Tr., pages 387 to 388.)

The Court further found that the appellants refused to allow the appellee to install a wattmeter upon the panel at the power-house of the appellants, through which panel connection is made between the transmission line of the appellee and the power-house of the appellants. (Tr., pages 262 to 263.)

The Court further found that in estimating and

measuring the power used by the appellants themselves on their circuits appellants used a wattmeter. (Tr., page 238.)

The Court further found that a wattmeter is a common, ordinary and universal device used in measuring horse-power. (Tr., page 1204.) (All witnesses agree.)

The Court further found (Tr., page 1082) that it is the common practice where a certain amount of horse-power is used that the producing company allows a reasonable starting surge to the consumer, sufficient to start and put in operation machinery which will give them the current provided for. (Tr., pages 606, 617, 625, 407 and 536.)

The Court further found (Tr., page 1083) that on or about the 13th of December, 1912, after the fire at the Perseverance Mine, the current was again turned on for the operation of the machinery, at the Perseverance Mine, and the machinery continued to operate until the night of the 24th of December, when the mine was shut down for Christmas Day. Since said time the appellee has been unable to start its machinery at the Perseverance Mine with the current provided by the appellants, except under orders of the Court requiring appellants to hold in their circuit-breaker during the momentary starting surge. (Tr., pages 258 and 259.)

The Court further found (Tr., page 1084) that the appellants herein have adopted a practice whenever the instantaneous circuit-breaker is thrown out, of requiring the appellee to notify the appellants at their head office in Treadwell, Alaska, a point about

two miles distant from Sheep Creek power plant and across Gastineau Channel, an arm of the North Pacific Ocean, and that the appellants refused to allow their electrician at the Sheep Creek Power plant to restore the circuit-breaker whenever the same goes out, but required that they be notified at their head office at Treadwell, and then send a man across to replace the circuit-breaker, and that this practice deprived the appellees of an uninterrupted current of periods covering from one to eight hours.

The testimony supporting this finding was very interesting, and *develops maliciousness* on the part of the appellants in their pretended execution of this contract, which shows how irreparable the injuries are that the appellee has had to suffer. (See testimony of H. L. Wallenberg, Tr., pages 256 to 265.)

The testimony shows that a telephone connection was made, at the appellee's expense, with the Sheep Creek power plant, for the purpose of keeping in touch with the electricians in charge there for the appellants. (Tr., page 264.) But that the appellants instructed their electricians at the power plant that they were not to replace the circuit-breaker when the circuit was broken, and required of the appellee that they be informed at Treadwell, Alaska, and that at their convenience they would then send a man over to replace the circuit. The distance from Treadwell to the Sheep Creek power plant is about two miles (Tr., page 261) across Gastineau Channel, an inlet of the North Pacific Ocean, which is subject to very severe weather conditions.

The assistant superintendent of the appellants in-

formed the appellee that this was being done in order to penalize the appellees for displacing this hair-trigger circuit-breaker. (Tr., page 262.)

The chief electrician of the appellants, Mr. Proebstill, testified that anyone, even the lawyer of the appellee, was competent to replace the circuit-breaker. (Tr., page 429.) It is to be noted that all of this was done in the face of the covenant on the part of the appellants to deliver 300 H. P. in an *uninterrupted* current.

The Court further found (Tr., page 1084) that at no time since the 6th of December, 1912, except during the momentary starting surges, had the appellants furnished the appellee with as much as 300 H. P., and further found that the appellants had failed to furnish the appellee with an uninterrupted current of 300 H. P. (Tr., pages 389 to 390.)

The Court further found (Tr., page 1085) that at the time the contract of October 14th, 1909, was executed neither the Oxford Mining Company nor its predecessors in interest had any other power plant with which to connect with said current of 300 H. P., and that no other plant was in contemplation at the time, and that it was the intention of the appellants to provide for the actual and beneficial use of the current of 300 real horse-power at the power plant of the appellants. (Tr., pages 126 and 113.)

The court further found from the surrounding circumstances that the starting surge was naturally to be implied or presumed, and that without a starting surge in connection with induction motors, which the Court finds is the ordinary type in mining use for

loads of 300 H. P. or less, the practical and beneficial use of more than 100 H. P. could not have been obtained. (Tr., page 1086.) See, also, testimony of Mr. R. A. Kinzie, superintendent of appellants, Tr., page 530.)

The Court further found that under the conditions existing aforesaid, at the time the contract was executed, the parties could not have contemplated the uninterrupted delivery of 300 H. P. provided for in the contract unless a starting surge was implied in said contract. (Tr., page 245.)

The Court further found (Tr., page 1087) that an inverse time relay circuit-breaker which will resist ordinary overloads for a period of thirty seconds was the usual, practical and common device for maintaining connections upon lines leaving power-houses, and that such circuit-breaker should be installed upon the switch-board of the appellants so as to protect the appellants from short circuits, yet provide enough resistance to prevent the circuit between the appellee and the appellants from being broken under ordinary starting surges. (Tr., pages 991, 607, 618, 626.)

The above concludes the Findings of Fact entered by the Court.

The Conclusions of Law are identical with the Findings of Fact and with the decree entered herein.

Throughout the Brief of the Appellants it is insisted that the construction placed upon the contract by the lower Court enables the appellee to use unusual, improper and wasteful devices in the consumption of the power, and inferentially it is stated that this is the condition existing in the case at bar.

Such representations to this Court, whether directly or by inference, are out of all accord with the facts in the case. The undisputed testimony is that the appellee in this case is using the ordinary and usual machinery used in connection with mining operations for loads of 300 H. P. or less. In the whole record of the case there is nothing to challenge the condition of any of the machinery of the appellee, nor of any of its power lines, nor of any of its other apparatus. There is no testimony of any vicious or bad practice, or any bad state of repair in the apparatus of the appellee.

The Findings of Fact requested by the appellants in this case are found on pages 1011 to 1053. No finding was requested tending to support the theory that the appellee was not using the ordinary machinery in use for mining operations of loads of 300 H. P. or less, or that there was any evidence justifying a finding, no finding being offered that the appellee was guilty of any negligence in maintaining its power lines or other apparatus in connection with the circuit in question.

The Court then proceeded to decree (Tr., pages 1093 to 1095):

FIRST—That the appellee is entitled to the uninterrupted and beneficial use of 300 real or actual H. P., to be supplied by electric current.

SECOND—That the appellee is entitled to have and receive of the appellants all reasonable starting surges used in connection with the ordinary machinery used in mining, for the application of 300 H. P. or less, and necessary to starting of such machinery,

and the beneficial use of an uninterrupted current of 300 H P.

THIRD—That the appellee was entitled to the use of real and not apparent power, the same to be measured by wattmeter, and that the appellee is entitled to use any ordinary meters, commonly and ordinarily used in mining operations, consuming 300 H. P. or less.

FOURTH—That the appellants so set and maintain their connections, circuit-breakers and other appliances with the appellee company that the actual, uninterrupted and beneficial use of the above-mentioned rights of the appellee should not in any way be interfered with, and the appellants were enjoined from using any appliances which would deprive the appellee of the enjoyment of the rights enforced or from maintaining any circuit-breaker or other appliances which would deprive the appellee of 300 H. P. or any part thereof, to be measured by wattmeter, or which would deprive the appellee of any reasonable starting surges necessary to the enjoyment and use of 300 actual horse-power. The Court further decreed that the appellee be allowed to install upon the switch-board connection of appellee's power line with the appellant's power-house a wattmeter and other meters in such a way that the appellee may have the same under lock and key for its information and inspection, to check the meter readings of the appellants.

The Court further ordered, adjudged and decreed that the thirty-second time relay circuit-breaker be installed upon the connection between the appellee's

power line and the appellants' power-house, in such a manner as to provide reasonable starting surges in connection with the use of the appellee's machinery.

It is to be noted that there is nothing in the decree which is not the logical consequence of the findings made by the Court. It is our contention that every finding made by the Court is supported by ample testimony, and we have attempted to give the citations supporting these findings, but if the Court desires to assume the burden of receiving the testimony, we respectfully request that the testimony of Mr. B. L. Thane, Mr. H. L. Wallenberg, and the appellants' electrical engineer, Mr. D. W. Proebstill, and appellants' superintendent, Mr. R. A. Kinzie, as well as the contract and the letter from Mr. F. W. Bradley to Mr. Henry Endicott, be read through.

We submit, however, that under the ruling of this Court in the case of *Thorndyke vs. Alaska Perseverance Mining Company*, 164 Fed., page 657, and the cases there cited, that the findings of the lower court are conclusive, and that there is no question before the Court concerning which this Court will inquire. The testimony of the various electrical experts that the wattmeter is the only way for measuring horsepower and that the starting surges, in order to secure the beneficial use of the amount of power contracted for, are never charged for or denied to the consumer, being testimony of custom and electrical practice, does not even leave the contract open to construction on this appeal.

ARGUMENT.

Thirty-four errors are assigned—five urged.

Appellee's argument will be confined to those discussed in the opening brief.

I.

EQUITY WITHOUT JURISDICTION.

It is first said that equity is without jurisdiction for

- (a) Only a breach of contract is involved.
- (b) The contract is to continue indefinitely.
- (c) Personal service and a high degree of skill is required.

a.

That it is merely a breach of contract is no bar to the proper exercise of equity jurisdiction. As in the case of a continuing trespass, so in face of a continuing breach of contract, equity frequently intervenes by prohibitory or mandatory injunction.

The interposition of equity to inhibit a breach of contract when the damages resulting therefrom are either inadequate or irreparable, or of such a nature as to be impossible of just computation, is almost universal.

Thus equity has intervened by injunction when the parties have entered into contracts for the assignment or use of patented articles or patented rights.

Adams vs. Messinger, 147 Mass. 185, 17 Atl. 491;

Rees' Appeal, 122 Pa. St. 392, 15 Atl. 807;

Kinsmen vs. Parkhurst, 18 How. 289, L. 385.

For the use or construction of a railway, or its right of way.

Johnson vs. St. Louis, 141 U. S. 602.

For the sale of chattels not to be obtained elsewhere.

Adams vs. Messinger, supra.

Vail vs. Osborn, 174 Pa. St. 58, 34 Atl. 315.

The general rule is well stated in Cyc.:

“The general principle applied by all the Courts is that when the breach of a contract consists in the doing of acts that a court of equity can prevent by injunction, and when it further appears that damages at law are not an adequate remedy, because the damage cannot be computed or is otherwise irreparable, such acts will be enjoined.”

22 Cyc. 848.

That the damages at law are inadequate, irreparable and incapable of any just computation, will not be seriously contended.

The Court so found, and the finding is abundantly supported by the record.

A project involving an outlay of nearly five million dollars in development work, tunnels to be driven, shafts to be sunk, runways to be projected, ore to be developed and opened, mills erected, crushers, docks, railways, trams, hoists to be installed,—the whole vast enterprise planned, and proceeding along definite preconceived lines,—all to be accomplished by a given time, the progress of each particular item being interdependent upon some other, like a perfect piece of machinery, all working in harmony or not at all, that in question the only power available and relied upon by appellee, who could say with any degree of certainty, or at all,

what damages would be commensurate with the breach of this contract by appellants?

Again, it is not a total, but only a partial, breach of the contract by appellant that is complained of. Should a steam-generating plant be installed, as naively suggested in the opening brief, and an action at law instituted, appellee at the very threshold would be told that appellants had been ready and willing to furnish a certain portion of what they had agreed to furnish, and it would be insisted that appellee's measure of damages was the difference between what it was entitled to receive and what was offered.

It is submitted that if ever there was a case where equity should prohibit the continuing breach of a contract, such is the one at bar.

Finally, so far as the question of the enforceability of the contract turns upon the extent of its duration is concerned, if it were ever opened, it is now foreclosed by

Franklin Tel. Co. vs. Harrison, 145 U. S. 459,
36 L. 776.

There the telegraph company gave to appellee the privilege of putting a wire on its poles under a contract whereby, after the lapse of ten years, the wire should belong to the telegraph company, but subject to the use of appellee in the same way as before, by paying a fixed amount annually, the telegraph company obligating itself to at all times keep the wire in repair and fit for use. The contract was specifically enforced against the telegraph company, which was compelled by the decree to "maintain in good

working order a telegraph wire thereon." The Court said:

"In respect to the question discussed at bar relating to the remedy but little need be said. It is clear that appellees had no adequate remedy at law for the protection of their rights. Suits at law from time to time to recover damages for the refusal of the telegraph company to transmit the messages of appellees over this wire would not have given the relief necessary to secure their rights under the contract. Such a remedy would not be complete nor an adequate substitute for an injunction that would secure the appellees against perpetually recurring denials of their rights."

The Court cited with approval

Joy vs. St. Louis, 138 U. S. 1, 34 L. 843.

Coosaw Mining Co. vs. So. Car., 144 U. S. 550,
36 L. 537.

b.

It is next said that specific performance will not be had because appellants "will be required to perform personal services requiring a high degree of skill."

Wherein a degree of personal skill is required in the manufacture and distribution of electric horsepower is not quite observed.

In this day and generation electricity is manufactured and distributed as any other commodity.

Appellants have wholly mistaken the application of the principle.

The principle is applied to cases where the contract is personal, and a decree enforcing specific

performance would, in a certain sense, entail involuntary servitude through an extended period of time; that is to say, would compel upon the part of one party the performance of certain acts and things which could not be performed except through his individual knowledge, skill and efforts. Thus, for instance, it would not be specifically decreed that professional services be continued through a period of time; or that any given work or labor be performed by any certain person.

This principle, however, has no application to cases where the contract provides merely for the delivery of a certain commercial commodity which may be manufactured by one man or set of men as well as by another.

As well might it be said that no contract whereby an irrigation company sells land under an agreement to furnish a given amount of water therefor will be specifically enforced by the land owner because forsooth such continued furnishing involves the operation of a pump or the maintenance of dam, ditch or intake.

It is true that in *Marble Co. vs. Ripley*, 10 Wall. 350, cited by appellants, it was held that specific performance of a contract whereby the marble company agreed to furnish certain quantities of marble from its quarry for an indefinite term of years was not enforced.

But here the marble was to be of a prescribed size and quality and from a particular location. The decision was made to rest upon the impracticability of enforcing the decree and casting upon the Court

the burden of pronouncing upon each separate piece of marble.

And this is not all. The point was but one of many against the specific enforcement of that particular contract, and was recognized by the Court itself as not being in and of itself satisfactory. The Court said:

“But what is a still more satisfactory reason for withholding a decree for specific performance is that the party who asks for it has an entirely adequate remedy provided by the reservation in his deed and by the contract itself. In addition to his remedy by suit at law he has a right of entry and the privilege of supplying himself with marble, etc.”

In the next case cited by appellants, *Tex. & Pac. Rwy. Co. vs. Marshall*, 136 U. S. 393, 34 L. 389, specific performance was refused expressly upon the ground of public convenience. The Court said:

“Although the exigencies of railroad business in the State of Texas may imperatively demand that these establishments or some of them should be removed to places other than the city of Marshall, and that this would be also required by the convenience of the public, in each case both the public convenience and the best interests of the railroad company would be sacrificed by a contract which is perpetual.”

The Court also found that an adequate remedy at law existed, saying:

“It appears to us that if the city of Marshall

has under such a contract a remedy for its violation, it is much more commensurate with justice that the injury suffered by the city should be compensated by a single judgment in an action at law."

There is, of course, no similarity between compelling a railroad company to maintain, irrespective of population and the necessities of the public, its shops and offices at a given point, and compelling appellants to furnish the amount of power agreed upon.

In the next case, *Berliner Gramophone Co. vs. Seamen*, 110 Fed. 30, the contract was one containing mutual obligations which were interdependent. The Court said:

"The obligation of its covenants is interdependent; that is to say, each party is bound for his covenants if the other party performs its. The act to be done by defendant is not a single act or a series of acts to be performed at many times. Were the Court to assume supervision of this continuous contract now and enforce its performance by injunction, it must continue this supervision and see to it during the whole existence of the contract that both parties fulfill their mutual obligations. This has been repeatedly declared to be outside of the functions of a court of equity."

No such case presents itself here. There are no mutual obligations. Appellees have done everything which they are called upon to do. Nothing remains for appellants to do except furnish the

agreed upon current of electricity. One decree settles the controversy.

In the next case, *General Electric Co. vs. Westinghouse*, 144 Fed. 458, there was an adequate remedy at law; in fact, the contract itself provided the damages for its breach. Neither had any party changed position by reason thereof. The Court said:

“There is no allegation or suggestion that either party because of the contract has abandoned any plant or sacrificed any property or put itself in any position it would not have occupied but for the agreement. The position of neither party has been changed for the worse.”

In the case at bar, had appellee's grantors not conveyed their water rights, mill sites, power sites, etc., appellees could themselves generate the power appellants agreed to deliver.

In *Sewerage & Water Board vs. Howard*, 175 Fed. 555, the bill allowed “that appellant will be damaged in a definite sum by the anticipated violation of the contract,” and this being the case, the Court found that upon the bill itself there was an adequate remedy at law.

In *Lone Star Salt Co. vs. Texas Railway (Texas)*, 90 S. W. 863, it affirmatively appeared that all the data needed for measuring of damages resulting from breach of the contract were “easily accessible and could always be obtained.”

There were also reciprocal obligations and duties. The Court said:

“Reciprocal obligations and duties are imposed for the proper and adequate performance of which on both sides the Court would have to see was specific performance decreed.”

“In other words, it would be necessary not only to regulate the conduct of the defendant in furnishing tonnage, but that of plaintiff in receiving and forwarding it and in fixing its freight charges. The task thus assumed would be not merely the enforcement of plaintiff’s legal duty to operate its railroad, but the enforcement also of the reciprocal obligation which it has assumed to the defendant.”

“This would make it necessary that the Court look to the operation of the two businesses in connection with and with reference to each other, so that each party should be required to perform the duties and receive the benefits contracted for.”

In *Pacific Electric Co. vs. Campbell Johnson (Cal.)*, 94 Pac. 623, it was held merely that a Court would not specifically decree the construction and operation of a railroad. The bearing of this authority upon the case at bar is not observed.

In *Peterson vs. McDonald (Cal.)*, 110 Pac. 465, not only did plaintiff have an adequate remedy at law, but specific performance would have entailed personal services.

“The effect of the decree would be to compel the performance of personal services which cannot be done.”

It was on both grounds that the relief sought was denied.

That the position contended for by appellants does not meet the indorsement of the Supreme Court of California is illustrated by

Gallagher vs. Equitable Gas & Light Co., 141 Cal. 708.

There plaintiff agreed to take gas at a specified rate and defendant agreed to furnish it for an indefinite period,—“as long as plaintiff should use it.” Citing with approval:

Zenia vs. Macy, 147 Ind. 568.

Whitman vs. Fuel Gas Co., 139 Pa. St. 492.

The Court said:

“In both cases there was consideration shown for the agreement to take gas and the companies agreed to furnish the gas at a rate fixed by the contract, but in neither of them did the consumer agree to take the gas for any definite period of time. There was a definite period within which the gas company agreed to supply the gas, but no express agreement that the consumer should take gas for that or any definite period.

“It was urged that specific performance could not be enforced and therefore injunction would not lie, but it was held that this contention could not be maintained. It was also held in this class of cases that there was no complete and adequate remedy at law.”

No citation is given to the case of

Montgomery Light & Power Co. vs. Mont. Tr. Co., commented upon in appellants' brief.

It is next said that

Pantages vs. Grauman, 191 Fed. 318,
decided by this court in 1911 is in point.

There it was sought to specifically enforce a contract whereby defendant, among other things, agreed to furnish plaintiff for ten years, on satisfactory terms, the first call on all vaudeville acts and performances booked in San Francisco by a theater company in which he owned a majority of the stock. Obviously no Court would undertake the enforcement of a decree depending so entirely upon the good faith, skill, business sagacity, to say nothing of the judgment of one of the contracting parties. It would be objectionable, both on account of the personal service involved and the utter inability of any Court to determine with any degree of accuracy whether or not its provisions were being complied with.

Franklin Tel. Co. vs. Harrison, 145 U. S. 459,
36 L. 776.

It is next said that this case can be distinguished from that at bar.

If this be true, it is of the *utmost importance*, as it is insisted by appellees that the case is direct authority for the principle here contended for, and can be neither distinguished nor discriminated.

It is said by appellees:

1. The question of continuous performance of personal service was not considered.
2. There was no feature of personal service involved.

3. The telegraph company was a public service corporation.

1.

It is true that the question of continuous performance or personal service was not discussed, because in that case, as in the one at bar, neither the continuous performance nor the personal service is of such a nature as to come within the rule announced in *Marble Co. vs. Ripley, supra*. And this, we think, can be demonstrated.

Two of the justices who had participated in the opinion handed down in *Marble Co. vs. Ripley* (Mr. Justice Stephen J. Field and Mr. Justice Joseph F. Bradley) also participated in the decision rendered in *Franklin vs. Harrison*. It can hardly be assumed that these distinguished jurists were unaware of the principle in the announcement of which they had theretofore concurred, or of its applicability to the case then before them.

In the *Franklin-Harrison* case, *Marble Co. vs. Ripley* was before the Court on another point, and is expressly commented upon in the opinion delivered by Mr. Justice Harlan. It is inconceivable that with the very case upon which appellants rely before them, the Court and such distinguished counsel as Mr. John P. Dillon, who represented the *Franklin Tel. Co.*, could have failed to have observed the applicability of the principle announced in the *Marble* case to that then being tried, if there was in fact any such applicability.

Further, there was a dissent upon another ground in *Franklin vs. Harrison*, and surely if *Marble Co.*

vs. Ripley had been applicable, it would not have escaped the notice of the dissenting justices.

It is next said there was no feature of personal service involved as there is in the present case.

In this we cannot but differ with appellants. The analogy between the two cases, we submit, is complete.

In both the duration of the contract was to be continuous and without interruption. In fact, in the "Telegraph case" it was decreed:

"The said Franklin Telegraph Company, their successors and assigns, so long as they shall continue to maintain said line of telegraph or any telegraph line between the cities of New York and Philadelphia, do maintain in good working order a telegraph wire thereon for the use of said firm or corporation so long as the complainants, or either of them, shall be members or a member thereof, according to the terms of said contract."

In both cases certain services were to be performed in principle utterly indistinguishable. In the telegraph case it was a telegraph line. The telegraph company was

"to keep and maintain at their own expense the said wire in good working order to and between the offices of the parties of the first part, etc., and between said offices and the place of business of the parties of the second part, etc., all expenses of batteries connected with the workings of said wire to be paid by the telegraph company."

Also:

"In case the said wire shall at any time be out

of order or incapable for any cause of being used, the parties of the first part (the Telegraph Company) will transmit the messages of the party of the second part, etc., free of all charge and expense."

Not only must this service be maintained for the parties with whom the contract was made, but also for *four of their licensees*.

In the case at bar all that is required of appellants is to furnish from a plant from which they are generating electricity for their own use a certain stipulated amount for the use of appellees.

If there is any difference in principle between the service required to maintain a telephone line, batteries, connections, etc., and that required to furnish electric power, it is not quite observed.

3.

It is next said that the case is distinguishable, for that the telegraph company was a public service corporation.

In reply to this, suffice it to say that there is not a single line or word of the opinion in the "Telegraph Case" which would indicate that this factor in the remotest manner entered into the decision.

It is therefore respectfully submitted that the Franklin case is an authority directly in point, cannot be distinguished or discriminated, and should foreclose the discussion.

This, however, is by no means the only decision to be found in the books analogous to the case at bar.

Passing by the cases of

Henricks vs. Hughes (Ala.), So. 637,

Joy vs. St. Louis, 130 U. S. 1,

Union Pac. Rwy. Co. vs. Pacific Rwy., 163 U. S.
564.

commented upon in the appellant's brief, and all more or less authority to sustain the contention of appellees, we respectfully invite the Court's attention to

So. Ala. Rwy. vs. Highland, 98 Ala. 407, 13 So.
684.

where a contract to maintain railway crossings was specifically enforced.

Schmidt vs. Marble Co., 101, 478, 41 S. W. 1024, enforcing specifically a contract to operate a street railway for thirty years.

Bailey vs. Collins, 59 N. H. 462, enforcing a contract to refrain from manufacturing certain leather articles.

Hackett vs. Hackett (N. H.), Atl. 434, enforcing an agreement to provide for the beneficiary during his life.

Chubb vs. Peckham, 13 N. J. Eq. 207, enforcing a contract against children to provide for their parents comfortable support and maintenance suitable to their condition wherever they or either of them might choose to reside.

St. Regis Paper Co. vs. Santa Clara L. Co. (N. Y. 1903), 65 N. E. 967, holding that:

“Where a vendor refuses to perform a contract under which the vendee is entitled to a designated

quantity of pulp wood yearly for a certain period of years from designated premises, the remedy of the vendor at law is inadequate where the future price of the wood and the cost of obtaining it is uncertain, and where the possibilities of the destruction of the timber by fire or the taking of the land by the State in the exercise of eminent domain prevent an accurate computation of the damages." The Court said:

"The time over which a contract extends is not necessarily controlling as to specific performance."

Whatever the law, as intimated by some of the authorities, may have been twenty years ago, it does not now sustain appellants' position.

As well expressed by Prof. Pomeroy in his article upon the subject in Cyc.

"But in a remarkable series of cases, beginning with the year 1890, contracts involving the operation of railways, often of the utmost complexity, and extending over a long term of years, or perpetually, have been enforced specifically. In the leading case of the series the controlling reason for the decision was that the interests of the general public would have been injuriously affected by a failure to make the decree, but this reason appears to have been dropped out of sight in the cases following this precedent."

36 Cyc. 587.

In *Texas Co. vs. Central Fuel Oil Co.*, 194 Fed. 1, decided by the Circuit Court of Appeals for the 8th

Circuit as late as February 13, 1912, there was a specific enforcement of a contract by which defendants agreed to deliver the oil produced from wells operated by them into the pipe-lines of complainant extending to such wells.

Almost every phase of the question is here examined and all the learning upon the subject carefully reviewed. Among other pertinent things the Court said:

“It is now well settled that when the chattels are such that they are not obtainable in the market, or can only be obtained at great expense and inconvenience and the failure to obtain them causes a loss which could not be adequately compensated in an action at law, a court of equity will decree specific performance.”

Examining the contention that equity would not intervene where the contract extended over a period of years necessitating supervision by the Court in the enforcement of its decree, after reviewing all the leading cases on the subject the Court said:

“While it is true, as contended by counsel for appellees, that these cases relate to contracts between railroads and therefore might have been sustained upon the ground of the interests of the public, there are other cases in no ways affected by public exigency, especially where violations of the decree could only occur infrequently, and each violation would be a single, complete act.”

It is believed that this case, like that of *Telegraph Co. vs. Harrison*, is directly in point, and cannot be distinguished.

But even had there never been written a line of law upon the subject, a mere statement of appellant's position would seem to amply refute it.

We were the owners of a valuable water right on Sheep Creek. We had been generating electric power. We had a generating plant, mill sites, machinery, etc. The appellants desired to develop a greater power than we were developing, to the end that it might use the excess on its own mines. It said to us: "If you will deed us your generating plant, your water right, your mill sites, we will furnish you with 300 horse-power." We deeded, in pursuance of this offer and contract, and now appellants, without offering to return us our property, says we are not entitled to have our horse-power, because, forsooth, the contract is a continuing one and some service will be required of it in the execution thereof, at the same time taking all our power for itself.

The wonder is, that counsel so learned and so distinguished in the law would pause sufficiently long to seriously urge to this Court a proposition so utterly conscienceless on its face.

II.

ORAL TESTIMONY.

It is next said that the Court erred in permitting testimony tending to ascertain the meaning of the contract.

This, of course, depends on whether or not the contract was ambiguous. If not, the testimony was, of course, inadmissible. If so, all will agree that it was properly received.

That the contract is in fact ambiguous in its terms is apparent from its mere reading, when the contention of the parties in this suit is borne in mind.

On the other hand, it is affirmed that by the expressions:

“A current not to exceed 300 electric horse-power”;

“The 300 electric horse-power hereinbefore mentioned”;

“300 horse-power at the generating plant”; is meant a current of electricity from which it might be theoretically possible, by the use of the most delicate and inappropriate machinery, to develop approximately 300 horse-power.

On the other hand, it is maintained that the expressions are controlled by the words “300 horse-power,” and that what is meant is 300 actual, as opposed to theoretic or apparent, horse-power.

It will at once be observed that from the terms of the contract itself it would be impossible for either Court or layman to say which of these contentions should be sustained.

The terms themselves are equally susceptible of either construction.

Under these circumstances the testimony introduced to show the surrounding circumstances of the parties at the time of the execution of the contract in question was properly admitted. The only two questions involved in the construction of the contract of October 14th, 1909, under the pleadings in this case are:

FIRST.—The question as to whether the appellees

were entitled to wattmeter measurement of their power and whether real or apparent power was intended in the contract.

SECOND.—As to whether the appellee was entitled to such reasonable starting surges as were necessary to the enjoyment and beneficial use of the power contracted for between the parties to the contract. *Neither one of these rights were specifically granted or denied by the contract of October 14th, 1909.*

It would be a waste of time after this observation to argue to the Court that the Court had no right to go into surrounding circumstances of the parties to determine their intentions concerning matters which were not definitely expressed in the contract. The citations of the hundreds of authorities which allow the Court to look into the surrounding circumstances would be a tax, under the circumstances, upon the patience of the Court, we assume, and we therefore omit such citations.

III.

EXPERT TESTIMONY.

It is next complained that the Court erred in refusing to permit the witness Proebstill to explain the meaning of the words "current not to exceed 300 electric horse-power."

This position is not sustained by the record.

The controversy arose in the following manner:

Witness' attention was called to the contract and counsel said: "The language of the contract in that connection is as follows: 'Shall elect to take a current of not to exceed 300 electric horse-power which

shall be taken from and at the generating plant to be installed.' What does that mean?"

Objection to this was sustained. The ruling was clearly correct. The question involved, not the meaning of the terms, but the construction of the contract. The Court said:

"I wish the witness might answer; that would save my doing so. He can explain the terms but not explain the contract." (Tr. 364.)

Thereafter, and beginning at page 368, the witness was permitted to fully explain all the technical terms.

Not only was this witness permitted to explain the meaning of all the terms used, but the greatest latitude in this respect was given to all the other witnesses produced by appellants.

IV.

THE GILBERT CONTRACT.

It is next said that the Court erred in refusing to permit witness Kinzie to testify to facts which would show noncompliance on the part of the appellee and its predecessors in interest with the terms of the contract sued upon.

We think this contention merits little consideration. Neither is it sustained by the record. No noncompliance was plead by defendants, appellants here, in their answer. It was not an issue in the case; and as to offering to amend, no amended pleading whatsoever was tendered. It was not even stated in what respect it was desired to amend.

Further than this, the record clearly discloses that appellees, plaintiffs below, had fully complied with

the contract upon their part, and had actually, in pursuance of its terms, deeded to appellants all the property and rights therein specified.

Nothing else was left for appellees to do. The contract upon its part had been fully performed long prior to the institution of the litigation.

If, as intimated in another portion of the brief, the complaint upon this point is predicated upon the refusal of the Court to permit any inquiry into the so-called Gilbert contract, it is hard to conceive upon what ground the ruling can be attacked.

Assuming that the Gilbert contract did in fact cast some kind of a cloud upon appellants' title, there is not a scintilla of testimony in the record that appellants then or at any other time ever requested appellees to quitclaim or otherwise remove such cloud.

And further, it affirmatively appears that appellants in fact accepted an indemnity agreement, executed on the same day as the deed, thereby waiving any claim it might otherwise have had.

And lastly, it is a little too much to say that appellants were justified in refusing to give to appellees that which they had agreed to give, because, forsooth, some third party had asserted some vague, indeterminable claim thereto.

V.

REAL NOT THEORETICAL POWER.

It is next said that the Court erred in finding and holding that the contract meant real as distinguished from theoretical or apparent horse-power.

Other than the mere assertion that this is what the contract means, and the testimony of experts to

the same effect,—*the very matter to be determined*—we have searched in vain through appellants' brief for any fortifying argument. No reason, either in logic or fact, is brought forward. It is merely said that the phrase necessarily means this and cannot mean anything else.

Appellants say that the thing agreed to be delivered was current, not developed, power. Therefore, any current from which the power might be developed, no matter how costly or unusual the machinery, would fulfill the terms of the contract.

Appellants' premises may be admitted, but its conclusion by no means follows. Certainly no one contends that anything was to be delivered other than current, but the question still remains open as to the quantity or volume of that current. Was it to be such as, with the use of costly, intricate and unusual machinery, might be theoretically capable of developing the specified amount of power, or was it that current which, with the use of unusual, ordinary and appropriate machinery, *was* capable of producing a like amount?

As to the testimony of the experts, it rests upon a false analogy. Because, it is said, in rule 74-A of the Standardization Rules of the American Institute of Electrical Engineers, that if an apparatus is rated at a certain number of kilowatts without specification as to the power factor, a power factor of 100% or unity will be presumed, therefore, in a contract in which no power factor is mentioned, one of 100% or unity will also be presumed.

Of course, the American Institute of Electrical

Engineers, eminent though it be, is not a legislative assembly, and cannot by rule establish any ultimatum for the construction of contracts. Neither does it at all follow that because one rule is adopted by electrical experts in the rating of machinery, a similar rule universally prevails in the construction of contracts.

In fact, the law is quite to the contrary, and where words or expressions have a technical as well as a popular meaning, the rule is that the popular meaning is to be preferred unless it clearly appears that the term was used in its technical sense.

“In construing a written contract, the words used should be taken in the ordinary and popular sense, unless from the context it appears to have been the intention of the parties that they should be understood in a different sense.”

9 Cyc. 578.

Of course, the term “*a current of not to exceed 300 electric horse-power*” is not necessarily technical, and to the average layman, at least, means a current which generates 300 horse-power by *the usual and ordinary methods*.

It would be amply sufficient in reply to assert the opposite of the contention of appellants and call attention to the fact that the question being one of intention, that is, a question purely of fact, and having been determined adversely to appellants on *abundantly sustaining testimony*, is here foreclosed under the well-settled rule in this jurisdiction that where a question of fact has been determined by a *nisi prius* court, it will not be by this court disturbed,

unless clearly erroneous. (164 Fed. 657.)

We are, however, by no means averse to a re-examination of this question of fact by this court, if the Court wishes to assume this additional burden.

What, then, was the intention of the parties at the time of the execution of the contract, and first—as to the situation of the parties at this time?

Wallenberg (Tr. 242) and Bishop (Tr. 253) both testified, and their testimony stands uncontradicted; that at the time of the execution of the contract and prior thereto, appellees' predecessors in interest had an installed equipment of *380 horse-power*.

One Beach Cylinder Compressor of 100 horse-power.

One Duplex Compressor of 165 horse-power.

One Multiple Westinghouse Compressor of 80 horse-power.

Another generator of 25 horse-power.

They further testified that the actual requirements of the mine as it then stood amounted to 261 horse-power. Appellants were desirous of obtaining the water right from which this power was generated, as well as certain mill sites and personal property specified in the contract and deed of conveyance.

They approached appellees' grantor through their own attorney, who was also at the time the attorney for the other contracting parties.

Their first offer was a current of not to exceed 200 electric horse-power. This offer was declined.

A consultation was held by appellees' grantor with Mr. B. L. Thane, who advised them that in his opinion *200 horse-power would be insufficient*, and that their requirements would need at least *300 horse-power*. Is it conceivable that when they eventually agreed to accept 300 instead of 200 horse-power they meant theoretical or apparent and not actual horse-power? Their Beach Cylinder Compressor and Duplex Compressor alone required 256 horse-power, and it can hardly be imagined that in contracting for 300 they were aware that they were in fact contracting for 210.

It would therefore seem only reasonable to presume that so far at least as appellees' grantor is concerned, it thought at the time of the execution of the contract that it was to receive a current from which 300 actual horse-power could be generated by the use of *the usual, ordinary and appropriate machinery*.

The other party to the contract, appellants, was represented by Mr. F. W. Bradley. Mr. Bradley himself admits that he did not use the term "a current of not to exceed 300 electric horse-power" in any technical sense. In his deposition he said: "In drawing up the contract, *neither Mr. Shackelford nor myself being electrical experts, we avoided the terms of the usual power contract, etc.*" (Tr. 684.)

Not only this, but in his letter to Mr. Henry Endicott (Tr. 652), which Mr. Shackelford took east with him at the time of the presentation of the original contract, he said:

“The mill is amply large enough for the mine, and surely 200 *H. P.* will more than take care of future requirements. The proposition provides ample time in which you could decide either to sell the property outright or take 200 *horse-power* for the operation of the mines and the mill.”

It will be observed that not one word is here said of current, etc.

Can it be conceived that Mr. Bradley, by the use of this language, meant anything but actual as opposed to theoretical horse-power? He was dealing with people whom he knew had no experience in such matters and were without any technical or mechanical learning. Can it be that he intended other than 200 horse-power as popularly and generally understood; that is to say, that amount of current which would produce that power in the usual, ordinary and customary manner with the use of the usual, ordinary and *appropriate machinery*?

To hold otherwise we think would be to do Mr. Bradley a very serious personal injustice, for it would place him in the unenviable position of securing by artifice and through the ignorance of the gentlemen with whom he was dealing that which he could not otherwise have obtained.

But even were this the case, it would not, and could not, affect the construction which under well-settled rules of law the Court must place upon this contract.

“Language must be interpreted in the sense in which the promisor knew or had reason to know that the promisee understood it.”

9 Cyc. 587.

So that, no matter what secret intention existed in the mind of Mr. Bradley, if any such intention in fact did exist, he at least knew that when he eventually promised to deliver 300 horse-power instead of 200 horse-power, his promisee would believe that this was a current which would in fact produce that much power by the use of the usual, ordinary and appropriate motors, and not one which would produce only 210 horse-power except by the use of more costly, intricate and unsuitable apparatus.

We are unmindful of the fact that Mr. Bradley now contends that he at all times intended the contrary, but the most casual glance at his deposition will indicate that he has become so much of an advocate in the case as to render his present recollections of his then intentions subject to a considerable amount of very just suspicion.

In any event, his secret intentions form no part of the proper construction of the contract.

Again, it is to be remembered that it was appellants' contract.

"It is a well-settled rule of construction that words will be construed most strongly against the party who uses them, the reason for the rule being that a man is responsible for ambiguities in his own expressions and has no right to induce another to contract with him on the supposition that his words mean one thing while he hopes the court will adopt a construction by which they would mean another thing more to his advantage."

9 Cyc. 590.

In *Noonan vs. Bradley*, 9 Wall. 394, 19 L. 751, it is said:

“A party who takes an agreement prepared by another and upon its faith incurs obligations or parts with his property, should have a construction given to the instrument favorable to him.”

This is precisely what happened in the case at bar. The contract was prepared by Mr. Shackelford under the direction of Mr. Bradley. It was transmitted to appellees' grantor through Mr. Shackelford, accompanied by a letter from Mr. Bradley addressed to Mr. Endicott, in which the contract as thus prepared was formally tendered in the following language:

“Our conclusions have been drawn up in the shape of a document which Mr. Shackelford will present to you.”

It is true that Mr. Bradley speaks in the letter of having made an agreement with Mr. Shackelford, as the representative of appellees' grantor, but the record utterly fails to disclose any authority upon the part of Mr. Shackelford to represent appellees' grantor, he being merely their attorney at law as well as the attorney at law for appellants.

The contract thus tendered, therefore, becomes the contract of appellants.

It was prepared by them, and upon its faith and credit as so prepared and tendered appellees' grantor, without further change than the mere insertion of 300 instead of 200 horse-power, parted with its property.

Under the rules above quoted, if there be ambig-

uity, the decision must, as a matter of law, be against appellants.

“If the contract is as contended for, it would impeach the good faith and fair dealings of the Insurance Company, for it would be deceptive and calculated to mislead those who are not well informed on matters of this kind.”

Phoenix Ins. Co. vs. Slaughter, 10 Wall. 404, 20 L. 445.

Under this well-settled rule of construction the decision must be with appellees, for, as has been pointed out, there can be no doubt that at the time of the execution of the contract, its grantor believed it was to receive a current from which it could develop 300 actual horse-power by the use of the usual, ordinary and appropriate machinery.

In view of this consideration, any other construction would be to impute the good faith of appellants in their dealings with persons “not well informed on matters of this kind.”

Again, it is a well-established canon that where the meaning of a contract is doubtful, that construction will be adopted which will do equity.

As said by the Supreme Court in *Noonan vs. Bradley*, *supra*.

“When an instrument is susceptible of two constructions, the one working injustice and the other consistent with the right of the case, that one should be favored which standeth with the right.”

Again, as was well said by the Circuit Court of Appeals for the 8th Circuit in

Leschen vs. Mayflower, 173 Fed. 855,

a decision in which Mr. Justice Vendevater, then Circuit Judge, participated:

“Where the language of an agreement is contradictory, obscure or ambiguous, or where its meaning is doubtful, so that the contract is fairly susceptible of two constructions, one which makes it fair, customary and such as prudent men would naturally execute, while the other makes it inequitable, unusual, or such as reasonable men would not be likely to enter into, the interpretation which makes it a rational and probable agreement must be preferred to that which makes it an unusual, unfair or improbable contract.”

To the same effect is

Barnsdall Oil Co. vs. Leahy, 195 Fed. 732,

from the same Circuit Court of Appeals, where it is said:

“Where the language of a contract is contradictory, obscure or ambiguous, or its meaning is doubtful, so that the agreement is fairly susceptible of two constructions, the more natural, probable and reasonable interpretation should be adopted.”

When it is remembered that on the one hand Mr. Bradley would have been more than willing to sign an agreement giving 300 actual as distinguished from apparent horse-power, while, on the other hand, appellees' grantor would, in accepting 210 horse-power, have been giving up almost one-third of what it then had, it would seem that the case at bar brings itself directly within the rule above stated.

Appellants in this case request the Court to construe the contract so that it will be announced that it was the mutual intention of the parties, including the predecessor in interest of the appellees, to abandon a water right which was capable of producing 380 horse-power and take in exchange therefor a contract which by the use of ordinary and practical machinery would only bring to them 100 horse-power, in the event the surge be not implied.

Acting upon the assumption that Mr. Henry Endicott and his associates were prudent and reasonable men, is it possible to assume that the contract was signed with the intention of donating to the appellants two-thirds of the value of the water right transferred, to say nothing of the other property which passed by the conveyance?

But beyond all this, by far the safest method of determining the real intention of the parties is to adopt that construction which the parties themselves placed upon the contract by their acts prior to the occurrence of any difficulty.

The record in this case stands uncontradicted that after appellants had been notified of the assignment to appellees of its rights under the contract, and before any controversy had arisen appellants so adjusted their circuit-breaker upon the transmission line as to give to appellees not only the full 300 actual horse-power specified in the contract, but a sufficient starting surge as well.

They had a time relay circuit-breaker not in use. It was not adjusted, because the instantaneous circuit-breaker was so arranged as to afford ample cur-

rent without interruption. They ordered a curve-drawing wattmeter for appellee's panel, and the situation thus stood from the 8th of November, when appellee first began to take the current, until the 6th of December, when Mr. Proebstil, acting under orders from his superiors, so readjusted the circuit-breaker as to render any current in excess of 210 horse-power unavailable.

It is inconceivable that appellants would have so acted if their then construction of the contract was what they now contend for.

Finally, on this point it is submitted that the decision should rest with appellee, for, as has been pointed out, the question, in any event, is one of fact found by the Trial Court against appellants on abundantly sustaining testimony and in accordance with every sound canon of construction.

VI.

SURGES.

It is next said that the court erred in finding and holding that under the contract appellee was entitled to such reasonable surge as might be necessary to start this machinery. The testimony shows that the contract was a flood-water contract (Bradley, Tr. 678); that the question as to the actual necessity of a starting surge was not discussed at the time of its execution.

The contract was sent east with the representation that it was intended to insure to the owners of the Sheep Creek mines sufficient power for their operations.

Great stress is laid by appellants upon the expres-

sion "not to exceed 300 horse-power." The contention might be meritorious if the contract did not show that it was the intention of the parties to deliver an uninterrupted current of 300 horse-power.

As said before, the contract was intended as a flood-water agreement so far as appellants were concerned. Appellee's grantor was in possession of a power plant which, according to the undisputed evidence, had a producing capacity of 380 horse-power real. (Tr. 530.)

In effect, Mr. Bradley said about as follows:

"You are at the lower end of the creek. I am desirous of developing more power than is necessary for you. If you will vacate the creek so I can accomplish this, I will double the head and preserve your status to the end that as long as this creek can produce the amount which is necessary to your consumption, you shall have it from my plant."

This was the purpose of the contract. The contract having been executed, and appellee's grantor having conveyed all its property rights, Mr. Bradley in effect now says:

"We admit, when you had your plant which we have taken from you, you could have started any of the machinery in question and operated the same, but because the contract which we executed says 'not to exceed 300 horse-power,' you are in a far different position than before you deeded the property to us, and under ordinary conditions you may get only a third of the power you used to get."

The words "not to exceed 300 horse-power" were properly put in the contract for the protection of appellants and not for the purpose of defrauding appellees. If the contract had contained an absolute covenant to deliver 300 horse-power, a hardship might have been worked upon appellants. Under extreme circumstances the water of Sheep Creek might become insufficient to generate 300 horse-power; there was no intention to exact of appellants more power than the waters were capable of generating.

Appellants' theory that the starting surge may be denied appellee is based upon a mechanical fallacy so apparent as to seem little worthy of comment.

It stands admitted by practically every witness that the surge is in no sense necessary, but is due entirely to a condition existing in the generating plant of appellants.

It stands undenied that a generator of 300 horse-power operating as a separate unit will start and operate a motor of the type used by appellee and bring it up to its load without the assistance of any other unit of generation.

Furthermore, the testimony shows that the high voltage which is artificially maintained in the generating plant is not at all necessary to the starting surge; that is to say, when an increase in amperage is necessary to start the machinery, a corresponding decrease in voltage occurs, without entailing any difficulty to the consumer. (Tr. 247.)

The high voltage maintained by appellants becomes necessary only after the inertia of the consuming

machinery is overcome and speed is desired.

It stands undisputed that when the Sheep Creek plant has produced only 500 horse-power, the machinery of appellee was started without difficulty.

It is an admitted fact in the case, unchallenged by any testimony to the contrary, that appellee's machinery was started by means of a gas engine incapable of developing over 245 horse-power (Tr. 249). How is it, then, that so much excess power is required from appellants' generator? The answer is obvious. The power is not necessary to the starting of appellee's machinery, but is consumed merely because it is there and because there is at present no known means of preventing its sudden rush through the circuit at the instant of overcoming the inertia.

The situation may be illustrated by the case of a boy and a man cranking an automobile. The boy with a limited amount of strength can just set the machinery in motion. The man, having two or three times his strength, starts the same machinery, and yet, ordinarily in starting, the power used by the man greatly exceeds that used by the boy. The reason is that, when the demand is made, the man will respond with greater strength than the boy. The excess of power is used, not because it is at all necessary, but because it simply happens to be there.

So, when a large generating plant, having in reserve a much greater amount of current than is necessary to start a given piece of machinery, is called upon to overcome the inertia, in that instant of time when the circuit is first thrown in, much more will be delivered than is at all necessary.

As in the case of the man and boy, it is because it is there, and not because it is necessary.

The greater the supply of power in reserve, the greater will be that consumed in the starting surge; the less power in reserve, the less will be consumed.

This accounts for the great variance in the amount consumed, sometimes only 50 per cent more than that used in operation, and sometimes 900 per cent more.

Thus, if appellants were at any given time using virtually all of the current which they were generating, a much less amount would be required in starting appellee's machinery than if at the precise moment appellants were using more of the current than being generated.

Thus, it appears that the fact that more power is consumed by appellee in the starting of its machinery than is required is not in any sense the fault of appellee, and results from the inability of appellants to prevent a greater momentary inrush of their current than is required.

It is for this reason that, as testified to by many of the witnesses and found by the Court, in commercial dealings, no account is taken of these surges. They being wholly unnecessary to the consumer and beyond the power of the generator to prevent, it would be obviously unfair to tax to the former.

But even if the case were different, and an excess of power over and above that required for operation was necessary to effect the starting of usual and ordinary machinery necessary to the adequate enjoyment of the current granted in the contract, nevertheless,

appellants would, under the contract, be obligated to furnish this excess, whatever it might happen to be, upon the well-known principle that where a thing is granted, that which is essential to its enjoyment passes with the thing itself.

If A granted to B a parcel of land in the midst of land owned by A, a right of way over the lands of A passes to B with the grant of the parcel itself. *It is ex necessitate.*

In this connection we desire to quote the very appropriate language of the Supreme Court of West Virginia in the case of Uhl vs. Ohio River R. R. Co., 34 S. E. 943. In speaking of easements of necessity:

“The implication of necessity is a mere fiction of the law for public policy to secure to the owner the full enjoyment of his estate in a grant of reservation, which he would be otherwise entirely deprived of by the pure obstinacy of his grantee. This is plainly a case of dog in the manger, what he cannot eat he will not let others eat, It is certainly a matter of gratification that the law permits the polite removal of the obstruction.”

A moment's consideration of the matter will demonstrate how utterly unfair any rule would prove in its operative effect.

Assume in the case at bar that the 900 per cent excess of power testified to by some of the witnesses as sometimes consumed in overcoming the inertia of machinery was necessary to start that of appellee; that is to say, assume that in order to start its machinery appellee must have a current nine times more potential than that required for operation, the

result would be that under appellants' alleged conception of the contract, appellee's available power would be only $33\frac{1}{3}$ horse-power, because as it required nine times this amount to start its machinery, that is, 300 horse-power, and as the contract limited the amount to which appellee could in any event be entitled to 300 horse-power, it must necessarily follow that appellee must confine its operations to machinery consuming in operation not over $33\frac{1}{3}$ horse-power.

Thus, though in terms appellee had been granted 300 horse-power, it would find itself in effect the possessor of but $33\frac{1}{3}$.

DECREE.

Confined to no one place, but scattered rather through the whole of appellants' brief, is to be found the very deepest pessimism as to the operative effect of the decree rendered herein.

We cannot help but feel that an examination of these dismal and gloomy forebodings will show them fanciful rather than real.

Appellants object to the wattmeter.

In limine let it be said that they themselves had already ordered one which, before they conceived the plan of cutting appellee's power from 300 to 210 horse-power, they had intended to place at the precise spot where they are now directed by the Court to make the installation.

In view of this consideration, how it now operates as a hardship is not observed.

Why did the Court order the installation of this so much objected to wattmeter?

Through all commercial transactions from time to time there arises a dispute as to the system of weighing or measuring a commodity contracted for. But very often, we regret to say, when a person purchases anything which cannot be all delivered at the same time, and the vendor has received the entire consideration therefor, the latter commences to cast about for some method of delivering the commodity in a depreciated weight or measure.

There is sometimes, for scientific and other purposes, a refined system of measurements, but there is always a practical system, measuring the thing according to its useful and commercial value, and not according to theory.

To the ordinary layman, particularly when the contract is not drawn in scientific terms,—and it is admitted by Mr. Bradley that the contract in question was not so drawn (Tr. 684)—the thing is not in the theoretical potentiality of a certain quantity, but the actual, useful potency of that quantity. Neither the Endicotts nor Hackett were electricians. The contract was the contract of a layman.

The testimony throughout the entire record discloses that the induction motors are the only motors commonly and ordinarily used for mining purposes. Even appellants' superintendent and chief electrician so testified (Tr. 334-396).

When Mr. Bradley wrote his letter to Mr. Endicott and forwarded draft of the contract, it is clear that he was referring to power in the sense of what work it would perform, and it was in this sense that his letter and contract were received.

At the time he wrote his letter to Prof. Cory, October, 1910 (Tr. 732), he made no claim that the contract referred to anything but actual horse-power.

After appellants were notified that appellee was desirous of receiving the power, appellants purchased a curve-drawing wattmeter for the purpose of placing the same upon the connection between the appellee and appellants at the power-house.

The testimony of every witness in the case is to the effect that the wattmeter is the proper instrument to record actual electric horse-power.

The answer of appellants to this is that the actual power derived from a circuit is dependent upon conditions existing in the machine of the consumer which are not within the control of the producer, and therefore a producer may be made to deliver according to wattmeter readings of a wasteful consumer.

It is to be remembered, however, that there is not a scintilla of evidence indicating any unusual or wasteful practices on the part of the appellee. No finding was offered to that effect, and no criticism whatever has ever been made of appellee's apparatus. It was admitted that it was of the ordinary type used in mining operations for loads of 300 horse-power or less.

A wattmeter is a device which measures the actual mechanical force of the current at the place where the instrument is situated,—in this case, the panel at the Sheep Creek power-house.

We are not unmindful that it has been inferentially said herein that an attempt is being made to

measure the power at the point of consumption, but the decree expressly provides for this measurement at the power-house on the panel where the connection is made before any line losses or other extraordinary conditions whatsoever are encountered. (Tr. 346.)

All through appellants' brief the power factor is spoken of as an existing thing in and of itself. As a matter of fact, however, power factor is not a thing in being; it is simply the ratio of difference between a theory and a fact.

A wattmeter is built so as to test the actual dynamic power of the current.

For this reason, in order to avoid disputes as to the precise amount of power being delivered, the Court has ordered the installation of a wattmeter.

It is next contended that the Court should not have compelled appellants to install a time relay circuit-breaker, and it is dismally prophesied throughout the brief that in some unforeseen manner this may work a total wreck of appellants' entire generating plant, hoisting machinery, transmission lines, and operating motors.

In answer to this, suffice it to say, that within five feet of the place where the Court has ordered this time relay circuit-breaker to be installed on appellee's panel, appellants have now a similar instrument installed on their own. The same condition is shown by the record to exist in each of the other two power-houses of appellants; in fact, it is disclosed that the circuit in question is the only one leaving any of the

power-houses of appellants on which this device has not already been installed.

It does not appear that any particular damage has as yet been caused appellants by reason of these instruments, and it is not quite observed how the one in question could be calculated to operate differently from those already in use.

The time relay circuit-breaker is shown by the testimony to be the proper and usual instrument adopted to prevent disconnection of the circuit by reason of the surges attendant upon the starting of machinery.

A circuit-breaker is an instrument of protection to appellants, and in no sense necessary to appellees.

It is next gloomily predicted that under the decree appellees will so decrease the efficiency of their operating motors as to decrease the power factor to such an extent as to absorb, not only all the current generated at Sheep Creek plant, but in addition that developed at the other two power-houses.

We think it is sufficient in answer to this to say, first, that it is highly improbable that any such situation will ever arise; and secondly, if it did, appellants would secure ample protection from the court.

The decree in the case at bar by no means forecloses appellants from complaining hereafter of any improper practice upon the part of appellee, and in no sense permits appellee to change conditions to the detriment of plaintiff.

POINTS SUGGESTED AFTER THE ARGUMENT.

Before concluding this brief, we feel that two or three points should be touched upon, which were

developed in the argument of the case the day this brief was completed.

STARTING SURGE.

First—It was stated by counsel for appellants that the amount of starting surge which might be required of the appellants was unlimited, and that therefore the contract might as well call for 3,000 as well as 300 horse-power. This is answered by the fact that instead of asking for a wide open circuit, such as the appellants give to their other consumer, the Alaska-Juneau Company, the only request made of the Court was that the ordinary type of thirty-second inverse time relay circuit-breaker be installed.

The testimony shows that this is the usual practice on circuits leaving power-houses, and also shows that no more than 300 H. P. could be taken from such circuit-breaker, excepting for overloads lasting less than thirty seconds.

It is inconceivable that the appellants should try to persuade this Court that there is greater danger in serving the appellees than there is in serving themselves or their other customer, unless the appellees are using a different class and character of machinery, which is dangerous to the circuit. The testimony is to the contrary. Chief electrician of the appellants testified (Tr., page 413):

Q. "From the standpoint of danger, practical danger of the capacity to handle the situation, the load of 300 or 400 horse-power motor isn't an element from a practical standpoint."

A. "*Not a very big element.*"

Q. "And in speaking of a load, you understand I speak of it in the sense of a starting load."

A. "I understand."

THE SYNCHRONOUS MOTOR.

Second—It is claimed that the synchronous motor should be installed by the appellees. The chief electrician for the appellants testified (Tr., page 413):

Q. "Now, there has been a good deal said here about synchronous motors. How many synchronous motors installed on any of the mining plants in this vicinity that you know of?"

A. "So far as I know, no synchronous motors installed at the present moment."

(See, also, Tr., page 933, wherein appellants' witness, Carl E. Heise, general manager of the Westinghouse Electric Company (for the Pacific Coast) says—referring to cross-interrogatory No. 4:)

Q. "Where have you seen a synchronous motor in use upon a three-phase alternating current for a load of not to exceed 300 horse-power?"

A. "I do not recall that I have ever seen a synchronous motor of such small capacity in commercial use."

(Tr., page 933.)

Further, where he says:

"I would state unquestionably that particularly in the smaller sizes, the induction motors predominate. Small synchronous motors are much more expensive than induction motors of a corresponding size, and induction motors are more simple and easy to operate."

WHAT IS THE DIFFERENCE BETWEEN A CURRENT OF THREE HUNDRED HORSE- POWER AND THREE HUNDRED HORSE- POWER?

Third—It was stated by counsel for appellants, in the argument in this case, that what they contracted to sell was *current* not power, and that therefore the system of measurement was different. It must logically follow, then, that a *current* of a certain horse-power means something entirely different than the *horse-power*, which defines the strength of the current, and that the words “300 horse-power,” as a modifying and descriptive phrase in connection to the word “current,” has an entirely different meaning than 300 horse-power alone. It seems to us to be a waste of time to attempt to answer such an argument.

THE VALUE OF SHEEP CREEK POWER.

Fourth—Statement was made by counsel for appellants, in the argument of this case, also that the contract appraised the value of appellees’ rights—at the time the same was executed—at \$25,000. From the testimony and from the contract itself it is perfectly apparent that \$25,000 was not an appraisal of the value of appellee’s rights, but merely an arbitrary figure fixed in case the appellee or its successors should dally along for nine and a half years without exercising their option to take the plant. At the outset of the negotiations Mr. Shackleford distinctly stated to Mr. Bradley (Tr., page 103):

“I informed him that I did not think he was prepared—from his offers—to pay a price that would be attractive to the owners of the property, and he finally outlined an agreement, which he called a * * * ‘flood-water agreement.’ ”

Mr. Bradley’s letter to Mr. Endicott shows clearly that it was never in the minds of the parties that the contract should eventuate in any other way, but that the option to take the horse-power would be exercised; that there was any difference in Mr. Bradley’s mind at this time between actual horse-power and an intricate current of the same amount of horse-power is evident from the terms of the letter, for he speaks there undoubtedly of “actual horse-power” (Tr., page 108):

“Estimating conservatively 150 H.P. is all the power these mines required for their past operations.”

He certainly could not have meant theoretical power, when he was in a position to know that the plant that he was about to purchase had a producing capacity of 300 H.P.

THERE IS NO EVIDENCE OF WASTE ON PART OF APPELLEES.

Fifth—During the argument counsel for the appellants also laid great stress upon the point that the circuit at the Perseverance Mine carried a very long transmission line, and stated that it was about four miles. This is the first time we have heard a four-mile transmission line referred to as a long transmission line and involving a low-power factor.

Testimony shows that the transmission lines of the appellants, performing their own service, are equally as long, and that the distance to the face of the Sheep Creek tunnel is very nearly as long. The Sheep Creek mines are at a very considerable distance from the place where their power plant is situated. Whether intentionally or not, counsel inferentially stated to the Court that the line losses on the appellee's circuit were charged against them, and that we were in fact measuring the power at the point of consumption instead of at the point of generation. The testimony shows the point of measurement is on the panel at the power-house of the appellants; that is where the Court ordered the installation of the wattmeter. With a wattmeter at that point it would register entirely different from a wattmeter at the point of consumption, and a wattmeter at the power-house would not measure any losses involved in transforming or transmission. (Tr., page 346.)

We consider that so far as the measurement of power was concerned, appellants lost their case irretrievably when it was discovered—during the examination of Mr. Proebstill (Tr., pages 387–388)—that they had actually ordered a wattmeter to measure the power on the appellee's circuit, but were concealing the fact.

The uncontradicted evidence of the case shows that a separate system of generation of 300 H.P. would serve the appellees as well and efficiently as if they were connected with the larger generator of appellants. In order to avoid this expense and un-

due inconvenience, the lower court has signed a decree allowing us the usual protection against breakage of circuits by ordering the installation of the relay breaker, and by ordering the measurement of the power in accordance with the method which the appellants first intended to give to the appellees, namely, by wattmeter.

IF THE CASE WERE REVERSED, IT WOULD ONLY BE TO DECREE THAT APPELLANTS SO CONSTRUCT THEIR PLANT AS TO GIVE A SEPARATE AND UNINTERRUPTED SERVICE OF THREE HUNDRED HORSE-POWER.

Sixth—If this case were to be reversed on the ground that starting surge could not be taken out of the larger generators of appellants, nothing could come to appellants from such a decision except a reversal, which would compel them to establish such a separate system of generation and connection as would place the appellees in *statu quo*, as they were at the time of the execution of the contract, and they would be compelled to go to the expense of installing of the separate generator, capable of producing 300 actual horse-power, so as to comply with their covenants to provide the appellees with an “uninterrupted current.” This would be a useless and unnecessary expense, but, so far as service is concerned, would be just as satisfactory to appellees, and under such circumstances would dispel from imagination of appellants the “bogie” as to a power factor of a 300 H.P. current, and the starting surge of the same would ruin their system (which they say

they fear) of large producing plants by some unforeseen calamity.

If this property is to be divided up again, because of the petty differences which have arisen, the successors of the Endicotts are at least entitled to be furnished with enough of the waters of Sheep Creek to produce the amount of power which Mr. Bradley promised to furnish in his letter and telegram.

CONCLUSION.

In conclusion, we respectfully submit that appellee cannot but feel that it has received from appellants in this case treatment which was in no sense its due.

Its grantor, and immediate predecessor in interest, deeded to appellants extremely valuable water rights, mill sites, power sites, and other valuable property, reserving unto themselves only about 1-9th of the total power capable of being developed from Sheep Creek.

At a comparatively small cost in the erection of their power-plant, appellants are deriving an immense yearly benefit from the rights of the property acquired under the contract.

Starting in to comply with its terms, they suddenly, and without warning, begin, not only the breach of both its letter and spirit, but seek to harass appellee with petty annoyances, compelling appellee to wait from three to nine hours for the restoration of the current at each outgoing of the circuit-breaker and denying appellee even the opportunity of measuring its own current pending the dispute.

The record does not disclose the motive which

prompts this apparently studied system of attack; not withstanding the knowledge upon the part of appellants as to the irreparable nature of the damage thereby ensuing.

Except for the protecting arm of the equity side of the court in reaching out and compelling appellants *pendente lite* to hold in their circuit-breakers and permit the starting of appellee's machinery, appellants might have been successful in their apparent plan and compelled the temporary abandonment, at least, of one of the largest and most laudable enterprises of development as yet begun in the territory.

We earnestly request the Court to continue this equitable protection, and submit that the decree herein rendered should in all respects be affirmed.

SHACKLEFORD & BAYLESS,

Attorneys for Appellee.

ALBERT FINK and

Z. R. CHENY,

Of Counsel.

No. 2311

3

IN THE

United States Circuit Court of Appeals

For the Ninth Circuit

ALASKA TREADWELL GOLD MINING COM-
PANY (a corporation), et al.,

Appellants,

VS.

ALASKA GASTINEAU MINING COMPANY
(a corporation),

Appellee.

APPELLEE'S PETITION FOR A REHEARING.

L. P. SHACKLEFORD,

ALFRED SUTRO,

Standard Oil Building, San Francisco,

Attorneys for Appellee and Petitioner.

Filed

Filed this.....day of July, 1914. JUL - 2 1914

F. D. Monckton,
FRANK D. MONCKTON, Clerk. Clerk.

By.....Deputy Clerk.

IN THE
United States Circuit Court of Appeals
For the Ninth Circuit

ALASKA TREADWELL GOLD MINING COM-
PANY (a corporation), et al.,

Appellants,

VS.

ALASKA GASTINEAU MINING COMPANY
(a corporation),

Appellee.

No. 2311

APPELLEE'S PETITION FOR A REHEARING.

*To the Honorable, the Judges of the United States
Circuit Court of Appeals for the Ninth Circuit;*

The appellee respectfully asks that the decision of this Honorable Court made in this cause on the 18th day of May, 1914, be set aside and a rehearing granted.

It asks this because the Court has, *without discussing or deciding two of the three vital points in the case*, ordered a dismissal of the bill. With the utmost respect we say that this has worked a grave injustice on the appellee.

The appellee and the appellants had a contract, under which, if the appellee deeded certain leased

property to the appellants, it was to receive from the appellants certain uninterrupted electrical current, or power. The appellee deeded the property to the appellants and the appellants have the property; this is conceded. But, the appellants do not give the appellee the agreed current or power. This suit was brought to compel them to do so.

The contract provides that, if the appellee elected

“to take a current of not to exceed three hundred (300) electric horsepower which shall be taken from and at the generating plant to be installed upon the leased premises hereinbefore described, the lessees (appellants) *undertake, covenant and agree to deliver said current* to the lessor or its assigns (appellee) upon the execution and delivery by the lessor or its assigns to the lessee of a deed or deeds conveying said leased property herein described to the lessees” * * * “The provisions herein as *to the delivery* of three hundred (300) horsepower at the generating plant to be installed on the premises herein described contemplates *the delivery of an uninterrupted current*” (Tr. pp. 36-38).

The appellee in its bill claimed, *first*, that the appellants were not delivering to it an *uninterrupted current*; *second*, that it was entitled to a *real* current and not to a *theoretical* current, and *third*, that the appellants should furnish current enough to overcome the inertia of the machinery of the appellee, so that it could utilize the 300 horsepower.

The Court below decreed:

First: That the appellee is entitled to an uninterrupted current of 300 horsepower.

Second: That the appellee is entitled to a real actual current of 300 horsepower, as distinguished from an apparent current; that is to say, that the strength of the current is to be measured by the standard current measuring device, namely, a Wattmeter, and not by theoretical calculations.

Third: That the appellee is entitled to such reasonable current, called a surge, as may be necessary to start its motors for utilizing the 300 horsepower agreed to be delivered.

This Court has disposed of the case by discussing and deciding only that the appellee is not entitled to the surge, or extra momentary current, sufficient to start its machinery. THE COURT HAS NOT DISCUSSED, AND IT HAS NOT DECIDED THE RIGHT OF THE APPELLEE TO AN UNINTERRUPTED CURRENT, NOR THE RIGHT OF THE APPELLEE TO HAVE ACTUAL INSTEAD OF APPARENT CURRENT. BOTH RIGHTS ARE OF VITAL IMPORTANCE TO THE APPELLEE.

THE AGREEMENT FOR AN UNINTERRUPTED CURRENT.

The contract provides *for the delivery* of an *uninterrupted current* of 300 horsepower. This is definitely stated in the last paragraph. It is not denied; it is not disputed, nor could it be.

The bill alleges that the appellants have so connected the power lines of the appellee with their generating plant that the current is frequently interrupted, to the great loss of the appellee (Tr. pp. 23 and 24). The finding of the Court below supports this allegation (Tr. p. 1155).

The evidence shows that the appellants have constructed a plant capable of producing between 2500 and 3000 horsepower. By connecting the power lines of the appellee with this plant, they shut off the power from the appellee as soon as the current exceeds 300 horsepower. This is done by means of an instantaneous circuit breaker installed by and entirely under the control of appellants. Instead of delivering a current of only 300 horsepower to the appellee, as they have agreed to do, and so that the circuit breaker could not operate, the appellants, as soon as the appellee opens the switch, throw in the full current, far in excess of 300 horsepower; instantly the circuit breaker operates and deprives the appellee of all power. The appellee has no control over the current which operates the circuit breaker; the appellants themselves control the current, and *by delivering more than the agreed current, they cause the circuit breaker to operate and, during long interruptions, they deprive the appellee of all current. But the appellants have no right whatever to deliver current in excess of 300 horsepower and then to shut it off because it exceeds 300 horsepower.*

In its opinion the Court says:

“There is nothing in the written contract requiring the latter to deliver power.”

Perhaps a distinction is here drawn between “current” and “power”; but the parties used the words interchangeably. They are so used every day. “Current” is the term in ordinary use to denote electric force in a state of action. The strength of “current” is expressed in horsepower or kilowatts. A good basis

of comparison to the expression "a current of electricity of 300 horsepower" is afforded by the expression "a bolt of silk of 300 yards", "current" being equivalent to "bolt", "silk" being equivalent to "electricity" and "300 yards" being equivalent to "300 horsepower". We submit it could not be said that a contract, to deliver a bolt of silk of 300 yards was not a contract to deliver 300 yards of silk because there is a contract to deliver not "yards of silk" but a "bolt".

By the contract in the case at bar, "the lessees undertake, covenant and agree to *deliver* said current to the lessor", and again, "The provisions herein as to the *delivery of three hundred horsepower*", etc. *They are not to deliver 500 or 600 or 2500 or 3000 horsepower or more, out of which the appellee is to take 300 horsepower.* They have covenanted, contracted and agreed to deliver a current of 300 horsepower; if they desire to deliver it out of a 2500-3000 horsepower current, then, manifestly, their plain duty is to adopt such mechanical devices as will reduce the current delivered to 300 horsepower. If they kept their covenant and delivered an uninterrupted 300 horsepower current, there would be no occasion for a circuit breaker.

When the circuit is broken, the appellants consume some five or six hours in sending a small boat across Gastineau Channel to their generating plant to throw the lever, on the circuit breaker—a momentary job which any child could perform. Then when the current is used again, and as soon as it exceeds 300

horsepower, there is another similar interruption. The appellants plainly violate their covenant to deliver "uninterrupted current", and, because of the unfortunate friction which has developed between the parties, they see to it that the interruptions are as long as possible.

To illustrate our contention: Suppose, a water company had a contract to deliver an uninterrupted supply of water, say, not to exceed one hundred miner's inches to a consumer, to be taken from the company's ditch which carried, say, one thousand miner's inches of water, and to be taken at an intake, all entirely constructed by and under the control of the company, the company having also constructed an automatic gate which would shut off the supply of all water from the consumer in the event that the amount delivered to him should exceed the one hundred miner's inches, could it, under any pretext, be claimed that the company could interrupt this supply by diverting into the intake of the consumer in excess of the one hundred miner's inches? The company would most obviously be obliged to regulate the supply of water delivered to the consumer, so that the same would not exceed the one hundred miner's inches agreed to be delivered.

The Court below saw the intolerable condition of affairs in this case and gave the appellee relief.

The decree of this Court, dismissing the bill, throws the appellee out of Court; it deprives it of the right to uninterrupted current, for which it has deeded valuable property, and it leaves the appellants in pos-

session of property without the agreed consideration for the same.

The evidence shows that the application of an uninterrupted current of 300 horsepower to the machinery of the appellee would start the same (Tr. 249). If such a current were delivered, the appellee could, without interruption, and as agreed and paid for, use the power to which it is entitled. But, the appellants, after having installed an instantaneous circuit breaker, turn on a current far in excess of 300 horsepower, so as to cause the circuit breaker to operate and to deprive the appellee of all power. *They take advantage of their own wrong. In this they are confirmed by the decree of this Court.* This is manifestly unjust.

THE APPELLEE IS ENTITLED TO ACTUAL AND NOT THEORETICAL HORSEPOWER.

The contract calls for the delivery and use of a current of 300 electric horsepower. The bill alleges that, *by reason of a theoretical method of measuring the horsepower, instead of by an actual measurement of the same, the appellee is receiving 210 instead of 300 horsepower* (Bill, paragraph XVI; Tr. pp. 20 and 21). The trial Court decreed that the electric current, instead of being measured in a theoretical manner, should be actually measured by the meter in every day use for measuring power, namely, a Wattmeter (Tr. p. 1093). *This relief was one of the principal grounds for filing the bill.*

The testimony of EVERY WITNESS in the case, on both sides, is that it was the universal custom to measure electrical current in terms of horsepower by the Watt-meter (Tr. p. 1204). The parties contracted with reference to this custom; to disregard it, is to destroy their intention. It might as well be said that a contract for the delivery of a certain number of ounces of a commodity, universally weighed upon avoirdupois scales, is complied with by the delivery of the same number of troy ounces of that commodity.

This subject is not discussed in the prevailing opinion of the Court.

Conclusion.

We have made this petition as brief as we could, consistently with our effort to point out that, through inadvertence, the prevailing opinion of this Court has, perhaps, entirely failed to discuss two of the three vital points in this case. If we have succeeded in our effort, then, we submit, we have shown good cause for a rehearing.

We realize that there is much occult and technical knowledge pertaining to the use of electricity (all of a very modern date) which might not fall within the experience or general knowledge of the Judges of this Court.

If this cause stands concluded without a further hearing, it will turn the appellee out of Court with its property gone and two of its essential claims unde-

terminated; on the other hand, if a rehearing is had, no possible prejudice can come to the appellants, for they have the property and they are, through a writ of supersedeas, relieved, pending the appeal, from a compliance with parts of the decree of the Court below. An additional labor, to be made as light as possible by the appellee, will, of course, if a rehearing is granted, be cast upon this Court. But the importance of the case and the technical nature of the questions involved, we submit, justify the granting of the application.

It is to be noted that the mandate has been stayed to November 1st. If the Court should grant this petition, it could then at its Seattle session order the case argued and submitted in October, and the case could be decided before the time for the stay of the mandate expires.

Dated, San Francisco,

July 1, 1914.

Respectfully submitted,

L. P. SHACKLEFORD,

ALFRED SUTRO,

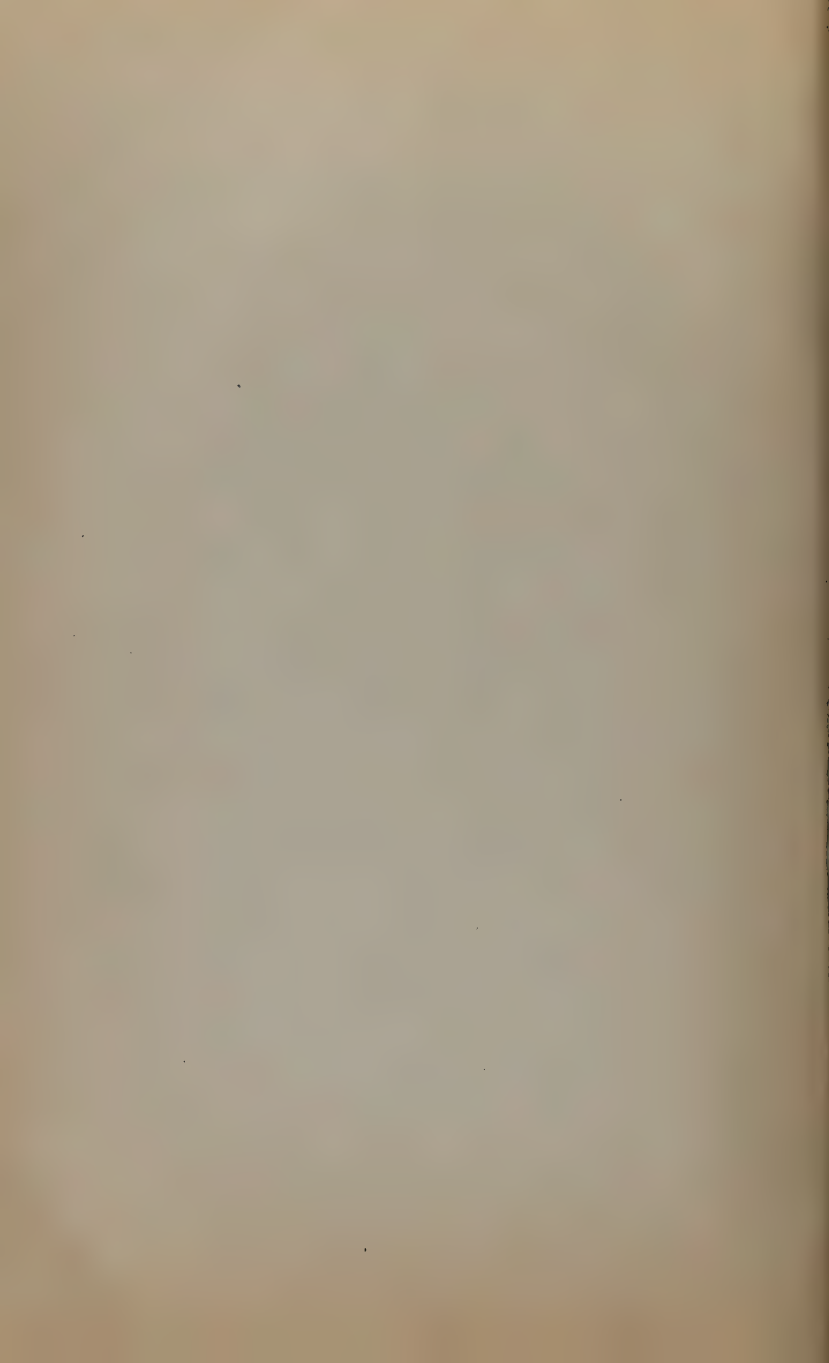
Attorneys for Appellee and Petitioner.

CERTIFICATE OF COUNSEL.

I hereby certify that in my judgment the foregoing petition for rehearing is well founded, and that it is not interposed for delay.

ALFRED SUTRO,

Attorney for Appellee and Petitioner.



4
No. 2311

IN THE
United States Circuit Court of Appeals
FOR THE NINTH CIRCUIT.

ALASKA TREADWELL GOLD MINING COMPANY
(a Corporation), Et Al.,
Appellants,

ALASKA GASTINEAU MINING COMPANY (a Corporation),
Appellee.

**APPELLANTS' REPLY TO APPELLEE'S
PETITION FOR A REHEARING.**

CURTIS H. LINDLEY,
HENRY EICKHOFF,
Counsel for Appellants.

Filed this.....day of July, A. D. 1914.

....., Clerk.

By....., Deputy Clerk.

Filed
THE JAMES M. HARRY CO.

JUL 21 1914

F. D. Monckton,
Clerk.

IN THE
United States Circuit Court of Appeals
FOR THE NINTH CIRCUIT

ALASKA TREADWELL GOLD MI- NING COMPANY (a Corporation), ET AL.,	<i>Appellants,</i>	} No. 2311
vs.		
ALASKA GASTINEAU MINING COMPANY (a Corporation),	<i>Appellee.</i>	

**APPELLANTS' REPLY TO APPELLEE'S PETITION
FOR A REHEARING.**

Counsel for appellee have filed a petition asking that the decision of this Court made herein on May 18th, 1914, be set aside and a rehearing granted for the reason (as appellee asserts) that this Court, *without discussing or deciding two of the three vital points in the case*, ordered a dismissal of plaintiff's (appellee's) bill.

The petitioner sets forth (page 2) that the appellee in its bill claimed:

"First: That the appellants were not delivering to it an uninterrupted current.

"Second: That it was entitled to a real current and not to a theoretical current; and

"Third: That the appellants should furnish current enough to overcome the inertia of the machinery of the appellee so that it could utilize the 300 horse-power."

We assume that the three points above stated are the "three vital points in the case" of which (as appellee claims) this Court decided only one, leaving the other two undiscussed and undecided. Upon this assumption we proceed to examine the decision referred to.

First: *That the appellants were not delivering to it an uninterrupted current.*

The decision states that:

"The appellee was complainant in the court below and by its bill sought the specific performance of a written contract."

The decision embodies the contract *in extenso*, and contains a summary of the evidence applicable to the three "vital points" referred to by appellee.

From this summary of the evidence it appears that the parties to this litigation were operating under a contract by virtue of which defendant was obligated

to deliver to plaintiff a certain current of electricity. That on entering into this contract

“the parties were dealing at arm’s length, there being no valid ground for saying that the International Company acted upon the suggestion of Mr. Bradley (defendant’s representative) that two hundred horse-power would be sufficient for the operation of its properties; on the contrary, it is undisputed that that company took the advice of Mr. Thane (plaintiff’s own representative) in respect to the matter and acted in accordance with his recommendation in making the contract in question.”

Referring to and construing this contract, the court decides:

“Turning to the written contract, it is seen that what the appellee’s predecessor in interest agreed to take and what the appellant companies agreed to deliver to it and its successors in interest was a current of not to exceed three hundred (300) electric horse-power which shall be taken from and at the generating plant to be installed upon the leased premises by the appellant companies. There is nothing in the written contract requiring the latter to deliver power. Indeed that is expressly conceded in the brief of appellee’s counsel where it is said: Certainly no one contends that anything was to be delivered other than current but (they add) the question still remains open as to the quantity or volume of the current.

“The difficulty in the way of the latter suggestion is that the written contract does not leave open the question as to the quantity or volume of the current for it expressly declares it to be a cur-

rent of not to exceed three hundred (300) electric horse-power."

This construction of the contract by the Court is a determination of the one pivotal and vital point in the case the decision of which necessarily comprehends a decision of the other two points referred to in Appellee's petition for rehearing. Proceeding further the decision of this Court disposes of the point firstly made by appellee's petition as follows:

"The appellant companies by the written contract agreed to furnish a certain specified quantity of uninterrupted electric current *which the evidence shows they have done*; the development of power from that current was and is a matter for the appellee company over which the appellant companies have under the contract no control or concern."

This declaration of the decision seems to dispose conclusively of appellee's contention that the words "power" and "current" were intended to be interchangeably used by the parties because the Court upon consideration of the evidence and the record finds to the contrary. It may be that the two expressions are at times used interchangeably in colloquial diction, but the decision of this Court is that in the case at bar the parties did not so employ these expressions.

Second: *That appellant was entitled to a real current and not to a theoretical current.*

The parts of the decision quoted under the foregoing point appear to fully answer this contention, viz: The appellant companies by written contract agreed to furnish a *certain specified quantity of uninterrupted electric current which the evidence shows they have done.* The development of *power* from that *current* was and is a matter for the appellee company over which the appellant companies have under the contract no control or concern. Appellee asserts that appellants did not deliver a continuous current of 300 horse-power because a circuit breaker was placed on appellants' delivery wire (for the protection of the rest of their system) which circuit breaker shut off the current whenever appellee drew a current exceeding 300 horse-power. Appellees' contention on this point is based upon the theory that appellants were to blame because appellee, by seeking to take a current of more than 300 horse-power, through their own fault, in violation of their contract, themselves shut off the current. We submit that it requires no argument or authority to show that such a contention is without force.

Appellees' petition states:

"The bill alleges that the appellants have so connected the power lines of the appellee with their generating plant that the current is frequently interrupted to the great loss of appellee

(Tr., pp. 23 and 24). On reference to these pages of the Transcript (pp. 23 and 24) this statement of the petition appears to be misleading. The allegations of the bill referred to are as follows:

“XIX

“The defendant corporations have so connected the plaintiff’s power lines with their plant that they have placed it beyond the control of the plaintiff to prevent a momentary surge or current in starting their machinery which for an instant draws upon the general supply of electricity at said plant and causes the said circuit-breaker to break the circuit. That the defendants have adopted the following practice in order to harass and annoy the plaintiff in securing the power to which it is entitled: Whenever the circuit-breaker is driven out *by a momentary surge of current* the defendants refuse to replace the circuit-breaker in place immediately and restore the current, but prohibit their electricians at said plant who are amply competent for that purpose from replacing the circuit-breaker and restoring the current, and refuse to restore the circuit-breaker and current until they are informed at Treadwell, Alaska, a point at least two miles distant from their Sheep Creek power plant and across Gastineau Channel, an arm of the North Pacific Ocean, and then at their convenience send a man across Gastineau Channel in a small boat to restore the circuit-breaker to its place. Plaintiff alleges not only that it is entitled to a reasonable surge for the purpose of starting its machinery so as to consume the continuous current of three hundred horse-power which the defendants undertake to deliver in the said contract; but further allege that if plaintiff was absolutely restricted to an uninterrupted current of 300 horse-power and was provided with an uninterrupted

current of 300 horse-power, the machinery now installed at the Perseverance mine could be started and operated continuously and after the starting thereof much less than 300 horse-power would be consumed. Plaintiff alleges that it is the duty of the defendants to furnish a current of 300 horse-power in such a way that it will be uninterrupted and so divorced from the defendants' other supply of electricity at said plant, that the defendants will not be enabled to make the momentary and involuntary drawing upon said current a pretext for depriving the plaintiff of power.

"XX.

"The plaintiff alleges that the defendant corporations have not (16) since the 6th day of December, 1912, furnished to the plaintiff at any time the 300 horse-power called for in the said contract, and have failed, at all times, far short of delivery of the same; and further allege that the defendants have failed to provide them with an uninterrupted current of 300 horse-power, but have so arranged their connections with the plaintiff's power line that constant interruptions occur, and insist upon continuing the interruptions at their convenience.

"XXI.

"Plaintiff respectfully shows to this Court that unless a momentary starting surge sufficient to start the machinery of the plaintiff to a point that it will consume 300 horse-power at the power plant of the defendant corporations, is allowed to this plaintiff, that plaintiff will suffer irreparable injury and damage and that the spirit and intent of the contract herein set forth will be violated, and that the plaintiff will never be able to enjoy

an uninterrupted current of 300 horse-power under the contract as provided for therein."

It is manifest from these allegations of the bill that the breaks in the current complained of by plaintiffs were only such as were occasioned by the circuit-breaker when plaintiff overdrew its contract allowance for the purpose of securing additional current in excess of 300 horse-power for its starting surges.

Third: *That appellant should furnish current enough to overcome the inertia of the machinery of the appellee.*

This point is also fully disposed of by the decision of this Court, viz:

"And we can see no just or legal ground upon which any court can read into the contract between these parties a requirement that in addition to a current of not exceeding three hundred horse-power the appellant companies shall also furnish such additional current as may be needed to start the old motors that had been used by the predecessor in interest of the appellee several years before the making of the contract or any other specific kind of motor."

Nothing we think need be added to this quotation.

The gist of appellees' petition for rehearing appears to be contained in the paragraph thereof which is in terms as follows:

"The Court has disposed of the case by discussing and deciding only that the appellee is not

entitled to the surge, or extra momentary current, sufficient to start its machinery. *The Court has not discussed and it has not decided the right of the appellee to an uninterrupted current, nor the right of the appellee to serve actual instead of apparent current. Both rights are of vital importance to the appellee.*"

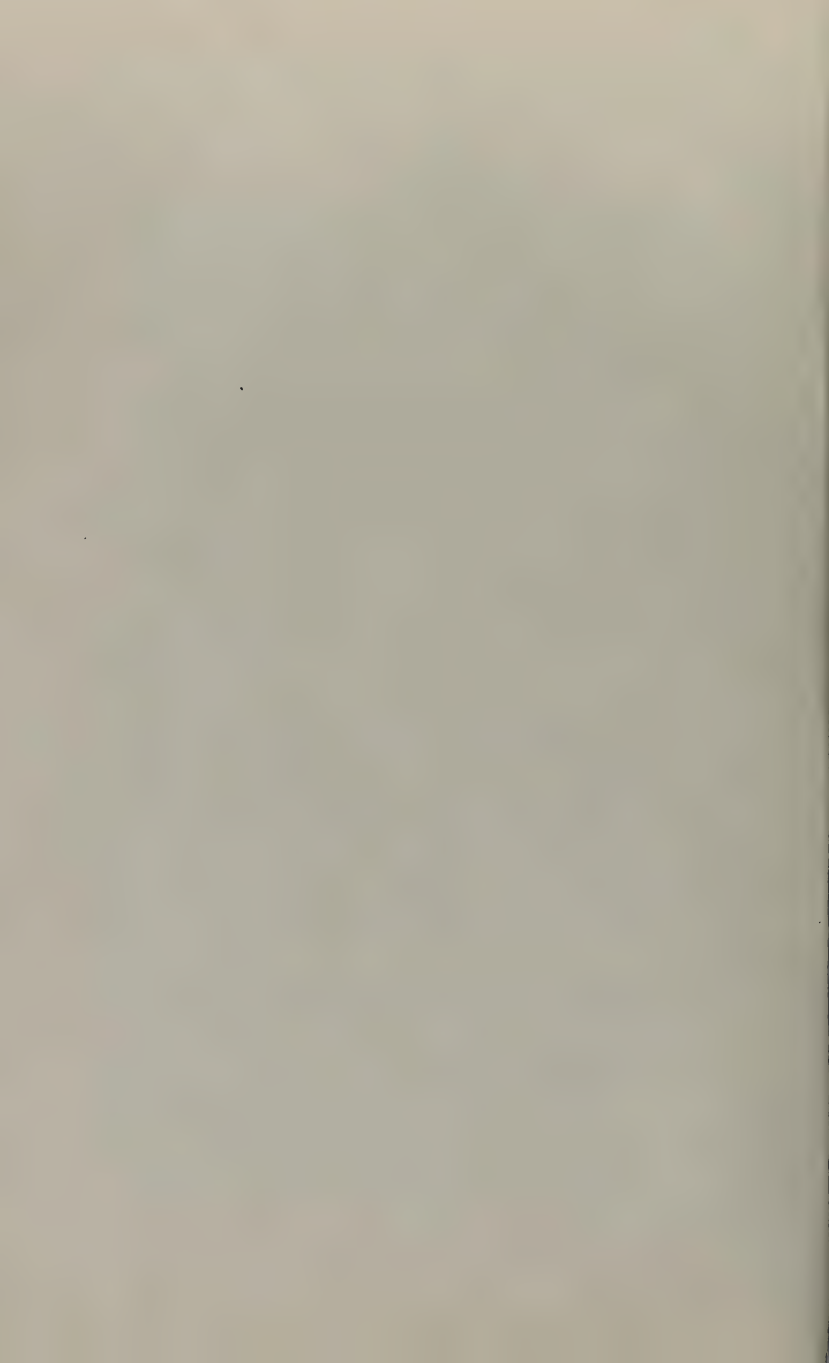
We are at a loss to understand the contention of appellee that both the points referred to have not been fully and conclusively decided, since the decision in terms adjudges that appellants did deliver to appellee an uninterrupted current, according to the contract (see quotation from decision under point First), and that appellee is not entitled, under the contract, to starting surges (see quotation from decision under point "Third.")

It may be that petitioner really means to complain because the Court failed to state each item of matter in the record and each rule of law by which it was induced to reach the conclusions specified in its decision, but surely no such complaint can justly be made in view of the extensive review of the record, conclusive of the case which is embodied in the decision.

We urge that the petition for rehearing be denied.

Respectfully submitted.

CURTIS H. LINDLEY,
HENRY EICKHOFF,
Counsel for Appellants.



No. 2314

United States
Circuit Court of Appeals

For the Ninth Circuit.

Transcript of Record.
(IN TWO VOLUMES)

PACIFIC PHONOGRAPH COMPANY, a Corpora-
tion,

Appellant,

vs.

SEARCHLIGHT HORN COMPANY, a Corpora-
tion,

Appellee.

VOLUME I.
(Pages 1 to 225, Inclusive.)

Upon Appeal from the United States District Court
for the Northern District of California,
Second Division.

FILMER BROS. CO. PRINT. 330 JACKSON ST., S. F., CAL.

FILED

SEP 26 1913

No. 2314

United States
Circuit Court of Appeals

For the Ninth Circuit.

Transcript of Record.
(IN TWO VOLUMES)

PACIFIC PHONOGRAPH COMPANY, a Corporation,

Appellant,

vs.

SEARCHLIGHT HORN COMPANY, a Corporation,

Appellee.

VOLUME I.
(Pages 1 to 225, Inclusive.)

Upon Appeal from the United States District Court
for the Northern District of California,
Second Division.

INDEX OF PRINTED TRANSCRIPT OF RECORD.

[Clerk's Note: When deemed likely to be of an important nature, errors or doubtful matters appearing in the original certified record are printed literally in italic; and, likewise, cancelled matter appearing in the original certified record is printed and cancelled herein accordingly. When possible, an omission from the text is indicated by printing in italic the two words between which the omission seems to occur. Title heads inserted by the Clerk are enclosed within brackets.]

	Page
Affidavit of Lewis H. Abbott.....	204
Affidavit of Peter Bacigalupi.....	200
Affidavit of Peter Bacigalupi, Jr.....	202
Affidavit of James S. Baley.....	206
Affidavit of C. D. Emerson.....	193
Affidavit of John H. George.....	75
Affidavit of Ellsworth A. Hawthorne.....	57
Affidavit of Louis Hicks, Dated June 7, 1913....	150
Affidavit of Louis Hicks, Filed June 23, 1913....	189
Affidavit of John Kaiser.....	84
Affidavit of Wm. H. Locke, Jr., on Motion for Preliminary Injunction	13
Affidavit of Edward W. Meeker.....	127
Affidavit of John H. Miller, on Behalf of Plain- tiff, on Motion for Preliminary Injunction.	21
Affidavit of Walter H. Miller.....	107
Affidavit of August Robert Pommer.....	197
Affidavit of Camillus A. Senne.....	129
Affidavit of Frank H. Stewart.....	77
Affidavit of Burnham C. Stickney.....	158
Answer of Pacific Phonograph Company, De-	

Index.	Page
Defendant, to the Bill of Complaint of Search-	
light Horn Company, Plaintiff.....	37
Assignment of Errors.....	211
Attorneys, Names and Addresses of.....	1
Bill of Complaint.....	1
Bond on Appeal.....	217
Certificate of Clerk U. S. District Court to Tran-	
script of Record.....	223
Citation on Appeal (Original).....	225
Defendant's Petition for a New Trial.....	31
EXHIBITS:	
Defendant's Exhibits, U. S. and Foreign	
Patents, Opposing Motions for Preliminary	
Injunction.....	229
Letters Patent No. 8824, to F. S. Shirley,	
Patented December 7, 1875.....	231
Letters Patent No. 10,235, to E. Cairns,	
Patented September 11, 1877.....	233
Letters Patent No. 34,907, to C. McVeety	
& J. F. Ford, Patented August 6,	
1901.....	235
Letters Patent No. 72,422, to G. S. Saxton,	
Patented December 17, 1867.....	237
Letters Patent No. 165,912, to W. H. Bar-	
nard, Patented July 27, 1875.....	239
Letters Patent No. 181,159, to C. W. Fal-	
lows, Patented August 15, 1876.....	241
Letters Patent No. 362,107, to C. R. Pen-	
field, Patented May 3, 1887.....	243
Letters Patent No. 406,332, to J. C. Bayles,	
Patented July 2, 1889.....	246

Index.

Page

EXHIBITS—Continued:

Letters Patent No. 409,196, to C. L. Hart, Patented August 20, 1889.....	249
Letters Patent No. 427,658, to J. C. Bayles, Patented May 13, 1890.....	252
Letters Patent No. 453,798, to A. Gersdorff, Patented June 9, 1891.....	255
Letters Patent No. 491,421, to A. Gersdorff, Patented February 7, 1893.....	258
Letters Patent No. 534,543, to E. Berliner, Patented February 19, 1895.....	261
Letters Patent No. 612,639, to J. Clayton, Patented October 18, 1898.....	272
Letters Patent No. 632,015, to G. L. Hogan, Patented August 29, 1899.....	274
Letters Patent No. 647,147, to F. Myers, Patented April 10, 1900.....	277
Letters Patent No. 648,994, to M. D. Porter, Patented May 8, 1900.....	282
Letters Patent No. 651,368, to J. Lanz, Patented June 12, 1900.....	286
Letters Patent No. 692,363, to W. C. Runge, Patented February 4, 1902.....	289
Letters Patent No. 699,928, to C. McVeety & J. F. Ford, Patented May 13, 1902...	294
Letters Patent No. 705,126, to G. Osten & W. P. Spaulding, Patented July 22, 1902	296
Letters Patent No. 738,342, to A. S. Marten, Patented September 8, 1903.....	299

EXHIBITS—Continued:

Letters Patent No. 739,954, to G. H. Villy, Patented September 29, 1903.....	302
Letters Patent No. 748,969, to C. Melville, Patented January 5, 1904.....	307
Letters Patent No. 763,808, to H. Sturges, Patented June 28, 1904.....	310
Letters Patent No. 769,410, to E. A. Schoet- tel, Patented September 6, 1904.....	313
Letters Patent No. 770,024, to B. Ruggiero & G. Bongiorno, Patented September 13, 1904.....	316
British Letters Patent No. 22,612, to George L. Hogan, Patented November 11, 1899.	319
British Letters Patent No. 7594, to William Phillips Thompson, Patented April 23, 1900.....	323
British Letters Patent No. 9727, to Walter C. Runge, Patented October 4, 1901..	332
British Letters Patent No. 22,273, to Walter C. Runge, Patented July 24, 1902.....	338
British Letters Patent No. 17,786, to Henry Fairbrother, Patented August 13, 1902	342
British Letters Patent No. 20,146, to Gus- tave Harman Villy, Patented June 9, 1903.....	349
British Letters Patent No. 20,567, to John Mesny Tourtel, Patented June 18, 1903.	356
British Letters Patent No. 5186, to Fred-	

Index.	Page
EXHIBITS—Continued:	
erick Charles Cockman, Patented November 17, 1903.....	362
British Letters Patent No. 14,730, to John Mesny Tourtel, Patented March 24, 1904.....	365
French Letters Patent No. 301,583, to Jose Guerrero, Patented June 23, 1900.....	372
French Letters Patent No. 318,742, to Eugene Turpin, Patented February 1902.....	375
French Letters Patent No. 321,507, to W. C. Runge, Patented May 28, 1902.....	393
French Letters Patent No. 331,566, to W. T. P. Hollingsworth, Patented April 28, 1903.....	402
Memorandum of Agreement Between U. S. Horn Co. and Camillus A. Senne.....	145
Names and Addresses of Attorneys.....	1
Notice of Motion for Preliminary Injunction..	11
Order Allowing Appeal.....	214
Order Allowing Withdrawal of Exhibits....	222
Order Denying Petition for New Trial.....	37
Order Extending Time to File Record and to Docket Cause.....	227
Order Fixing Amount of Bond on Appeal.....	216
Order Granting Injunction.....	209
Petition for Allowance of Appeal With Superseas.....	210
Stipulation as to Record and Hearing on Appeal.....	220
Subpoena ad Respondendum.....	9

Names and Addresses of Attorneys.

D. HADSELL, Esquire, Humboldt Savings Bank
Building, San Francisco, California, and

LOUIS HICKS, Esquire, Woolworth Building, 233
Broadway, New York, N. Y.,

Attorneys for Defendant and Appellant.

MILLER & WHITE, Esquires, Crocker Building,
San Francisco, California,

Attorneys for Plaintiff and Appellee.

*In the District Court of the United States for the
Northern District of California, Second Divi-
sion.*

SEARCHLIGHT HORN COMPANY,

Plaintiff,

vs.

PACIFIC PHONOGRAPH COMPANY,

Defendant.

Bill of Complaint.

For Infringement of Patent No. 771,441.

Now comes the Searchlight Horn Company, plain-
tiff in the above-entitled suit, and files this its bill
of complaint against Pacific Phonograph Company,
defendant, and for cause of action alleges:

1. That the full name of the plaintiff is Search-
light Horn Company, and during all the time of the
actual infringement hereinafter complained of said
plaintiff was and still is a corporation created under
the laws of the State of New York and having its

principal place of business at the City of New York in the State of New York.

2. That the full name of the defendant is Pacific Phonograph Company, and since February 1, A. D. 1909, said defendant has been and still is a corporation created and existing under and by virtue of the laws of the State of California and having its principal place of business at the City and County of San Francisco in the State of California.

3. That the ground upon which the Court's jurisdiction depends is that this is a suit in equity arising under the patent laws of the United States. [1*]

4. That heretofore, to wit, on October 4, A. D. 1904, the Government of the United States granted, issued and delivered to one Peter C. Nielsen letters patent of the United States for a new and useful invention, to wit, a horn for phonographs and similar machines; that said letters patent bore date October 4, A. D. 1904, and were numbered 771,441, and granted to the said Nielsen and his heirs and assigns *and* sole and exclusive right to make, use and vend the said invention throughout the United States of America and the territories thereof during the period of seventeen years from said October 4th, A. D. 1904; that a more particular description of the invention patented in and by said letters patent will fully appear from said letters patent which are ready in court to be produced by plaintiff or a duly authenticated copy thereof and of which profert is hereby made.

5. That heretofore, to wit, on January 4th, A. D.

*Page-number appearing at foot of page of original certified Record.

1907, by an assignment in writing plaintiff became and ever since has been, and is now, the sole owner and holder of said letters patent and all the rights thereby granted.

6. That since January 4th, A. D. 1907, plaintiff has made and sold devices covered and claimed by said letters patent and upon each of said devices has marked the word "Patented," together with the date and number of said letters patent.

7. That heretofore, to wit, on May 9, A. D. 1911, plaintiff herein commenced an action at law in the above-entitled court against Sherman Clay & Company, a corporation created under the laws of the State of California and doing business in the Northern District of California, and on said last-named day filed its declarations whereby it alleged the [2] issuance of the aforesaid letters patent, No. 771,441, to Peter C. Nielsen and the ownership thereof by plaintiff since January 4, A. D. 1907, and that said Sherman Clay & Company had infringed upon said letters patent, whereby plaintiff had been damaged in the sum of Fifty Thousand Dollars, and prayed that judgment be rendered against said Sherman Clay & Company for said damages; that thereafter, to wit, on May 25, A. D. 1911, said Sherman Clay & Company appeared in said action and filed its answer denying all the allegations in said declaration, and thereafter, to wit, within thirty days before the trial of said action filed a notice in writing under section 4920 of the Revised Statutes of the United States setting up that the said Nielsen was not the first or original or any inventor of the thing patented

in and by said letters patent, No. 771,441, but that long prior to the supposed invention thereof by the said Nielsen the thing patented in and by said letters patent, No. 771,441, was shown, described and patented in and by certain prior letters patent of the United States and of Great Britain which were specified by given numbers, and that long prior to the supposed invention by the said Nielsen the thing patented in and by said letters patent, No. 771,441, had been made, used and sold by and was known to others in this country, and the names of the persons alleged to have had such prior knowledge and use together with the places where the same was used were set up in detail in said notice; that upon the issues so joined the said action at law against Sherman, Clay & Company came on for trial before the above-entitled court and a jury, which said trial commenced on October 1, A. D. 1912, and was concluded on October 4, 1912; that evidence was introduced by both sides, and the case was fully [3] and fairly tried on its merits and after argument by counsel on both sides was submitted to a jury for decision; that thereafter, on October 4, A. D. 1912, said jury returned its verdict in favor of the plaintiff in said action and against Sherman, Clay & Company, the defendant therein, and assessed damages in favor of said plaintiff and against the said defendant at the sum of \$3,578.00; that thereupon a judgment was duly made and entered in favor of the said plaintiff and against the said Sherman, Clay & Company, defendant in said action, for the said sum of \$3,-578.00 and costs of suit; that thereafter in due season

defendant in said action duly and regularly petitioned said Court for a new trial and after arguments of counsel and due consideration of the matter said Court denied said motion for a new trial; that thereafter the plaintiff in the said suit voluntarily remitted from the amount of said damages all of said damages over and above the sum of \$1.00, and the said judgment has never otherwise been changed, altered or modified but is still in full force and effect.

8. That since February 1, A. D. 1909, the defendant herein without the license or consent of plaintiff, in the Northern District of California and elsewhere, has sold and is now using and selling horns for phonographs containing and embracing the invention patented in and by the said letters patent No. 771,441, and thereby has infringed and is now infringing upon said letters patent.

9. That by reason of the infringement aforesaid, the defendant has realized profits and the plaintiff has suffered damages, but the amount of such profits and damages is unknown [4] to plaintiff and can be ascertained only by an accounting.

10. That the plaintiff has requested the defendant to desist from further infringement of said letters patent and to account to plaintiff for the damages suffered by plaintiff and the profits realized by defendant from and by reason of said infringement, but the defendant has failed and refused to comply with said request or any part thereof, and is now extensively selling said infringing horns.

11. That the defendant threatens and intends to continue said infringement during the pendency of

this suit and unless restrained therefrom by this court will continue to infringe during the pendency of this suit, whereby plaintiff will suffer great and irreparable injury, for which it has no plain, speedy or adequate remedy at law.

WHEREFORE, plaintiff prays:

First: That upon the filing of this bill a preliminary injunction be granted enjoining and restraining the defendant, its officers, agents, servants and employees, pending the suit and until the further order of the court from making, using or selling, or threatening, or advertising or offering to make, use or sell any horns for phonographs containing the invention patented in and by said letters patent, No. 771,441, and from infringing upon said letters patent in any manner whatever or aiding or abetting or contributing to any such infringement.

Second: That upon the final hearing the defendant, its officers, agents, servants and employees, be permanently and finally enjoined and restrained from making, using or [5] selling any horns for phonographs or other machines containing the invention patented in and by the said letters patent, No. 771,441, and from threatening or advertising or offering to make, use or sell any such horns and from infringing upon said letters patent in any manner whatever, or aiding, abetting or contributing to any such infringement, and that the writ of injunction accordingly be issued out of and under the seal of this court enjoining the defendant, its officers, agents, attorneys, servants and employees as aforesaid.

Third: That it be ordered, adjudged and decreed that the plaintiff have and recover from the defendant the profits realized by the defendant and the damages sustained by the plaintiff from and by reason of the infringement aforesaid, together with costs of suit and such other and further relief as to the Court may seem proper and in accordance with equity and good conscience.

Fourth: That upon the filing of this bill the writ of subpoena ad respondendum be issued, directed to Pacific Phonograph Company, the defendant herein, commanding it to appear and answer this bill of complaint in accordance with the rules of the Court.

SEARCHLIGHT HORN CO.

By JOHN H. MILLER and

W. K. WHITE,

Solicitors for Plaintiff.

JOHN H. MILLER and

W. K. WHITE,

Of Counsel for Plaintiff,

Crocker Building, San Francisco, Cal.

[6]

United States of America,
Southern District of New York,
County of New York,—ss.

W. H. Locke, Jr., being duly sworn, deposes and says that he is the President of Searchlight Horn Company, the complainant in the within entitled action; that he has read the foregoing bill of complaint and knows the contents thereof; that the same is true of his own knowledge, except as to the matters which are therein stated on his information or belief, and

as to those matters, that he believes it to be true.

W. H. LOCKE, Jr.

Subscribed and sworn to before me this 1st day of May, 1913.

DANIEL J. BEGLEY,
Notary Public, #406, New York. [7]
No. 27903.

State of New York,
County of New York,—ss.

I, William F. Schneider, Clerk of the County of New York, and also Clerk of the Supreme Court for the said County, the same being a Court of Record, DO HEREBY CERTIFY, That Daniel J. Begley, before whom the annexed deposition was taken, was, at the time of taking the same, a Notary Public of New York, dwelling in said County, duly appointed and sworn, and authorized to administer oaths to be used in any Court in said State, and for general purposes; that I am well acquainted with the handwriting of said Notary, and that his signature thereto is genuine, as I verily believe.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seal of the said Court and County, the 1st day of May, 1913.

[Seal]

WM. F. SCHNEIDER.

[Endorsed]: Filed May 9, 1913. W. B. Maling,
Clerk. By J. A. Schaertzer, Deputy Clerk. [8]

Subpoena ad Respondendum.

UNITED STATES OF AMERICA.

*District Court of the United States Northern District
of California, Second Division.*

IN EQUITY.

The President of the United States of America,
Greeting: To Pacific Phonograph Company.

YOU ARE HEREBY COMMANDED, That you
be and appear in said District Court of the United
States, Second Division, aforesaid, at the courtroom
in San Francisco, twenty days from the date hereof,
to answer a Bill of Complaint exhibited against you
in said Court by Searchlight Horn Company, a cor-
poration created under the laws of the State of New
York, at the city of New York, and to do and receive
what the said Court shall have considered in that
behalf.

WITNESS, the Honorable WILLIAM C. VAN
FLEET, Judge of said District Court, this 9th day of
May, in the year of our Lord one thousand nine
hundred and thirteen and of our Independence the
137th.

[Seal]

WALTER B. MALING,

Clerk.

By J. A. Schaertzer,

Deputy Clerk.

MEMORANDUM PURSUANT TO RULE 12,
RULES OF PRACTICE FOR THE COURTS
OF EQUITY OF THE UNITED STATES.

YOU ARE HEREBY REQUIRED to file your answer or other defense in the above suit, on or before the twentieth day after service, excluding the day thereof, of this subpoena, at the Clerk's office [9] of said Court, pursuant to said bill; otherwise the said bill may be taken pro confesso.

WALTER B. MALING,
Clerk.

By J. A. Schaertzer,
Deputy Clerk.

RETURN ON SERVICE OF WRIT.

United States of America,
Northern District of California,—ss.

I hereby certify and return that I served the annexed Subpoena Ad Respondendum on the therein named Pacific Phonograph Co., by handing to and leaving an attested copy thereof with A. R. Pommer the Managing Owner of said Pacific Phonograph Co., personally, at San Francisco, in said District, on the 9th day of May, A. D. 1913.

C. T. ELLIOTT,
U. S. Marshal.
By Elmo Warner,
Office Deputy.

[Endorsed]: Filed May 10, 1913. W. B. Maling,
Clerk. By J. A. Schaertzer, Deputy Clerk. [10]

*In the District Court of the United States for the
Northern District of California, Second Division.*

SEARCHLIGHT HORN COMPANY,

Plaintiff,

vs.

PACIFIC PHONOGRAPH COMPANY,

Defendant.

Notice of Motion for Preliminary Injunction.

To the Pacific Phonograph Company, Its Officers,
Servants, Attorneys, Workmen and Employees:

You are hereby notified that on Monday, the 19th day of May, A. D. 1913, at the hour of ten o'clock A. M., or as soon thereafter as counsel can be heard, plaintiff in the above-entitled suit will move the said court at the courtroom thereof in the United States Postoffice and Courthouse Building, corner of Seventh and Mission Streets, in the City and County of San Francisco, State of California, for an order granting to plaintiff a preliminary injunction enjoining and restraining you until the final hearing of the case from making, using or selling or threatening or advertising or offering to make, use or sell any horn or horns for phonographs either attached to and connected therewith or separate and disconnected from any phonograph or other instrument containing and embodying the invention described in the specification of said letters patent, No. 771,441, and claimed in and by claims 2 and 3 thereof, or either of them, and from infringing upon said claims,

or either of them, of said letters patent in any manner whatever and from aiding or abetting or contributing to any such infringement, and especially and particularly from making, using or selling or threatening or advertising or offering to make, use or sell any horns for phonographs, such as those heretofore and now [11] being sold, advertised, offered for sale and dealt in by you in connection with the Edison cylinder phonographs commonly known as "Flower Horns" or metal-ribbed horns, consisting of metal strips joined together at their edges by a seam so as to provide ribs on the outside of the horn and being tapered and of a bell shape, the same being horns manufactured and furnished to you by Thomas A. Edison, Inc., in connection with the Edison phonographs.

Upon the hearing of this motion plaintiff will use, read and rely upon the bill of complaint herein, the affidavits of Wm. H. Locke, Jr., and John H. Miller, copies of which are herewith attached, together with a copy of the patent No. 771,441 and the catalogue of the Edison phonographs cylinder models, heretofore filed and now on file with the Clerk of the court in this suit, also the judgment-roll, the petition for new trial, the order denying the new trial and the horn exhibits in connection with action No. 15,326 in this court, entitled Searchlight Horn Company vs. Sherman Clay & Company, also the papers and pleadings in the suit in equity in this court of the Searchlight Horn Company vs. Sherman Clay & Company, No. 15,623, the order granting a preliminary injunction and the preliminary injunction itself in said case.

The ground of the above motion is that claims 2 and 3 of said patent No. 771,441 have heretofore been sustainedd and held valid in the aforesaid action at law of this same complainant against Sherman Clay and Company, No. 15,326, and that the issuance of a preliminary injunction herein is necessary and proper and under the rules of practice of this court, and that unless the same is granted plaintiff will suffer great and irreparable loss and injury, for which there is no plain, speedy or adequate remedy at law.

Dated this 9th day of May, 1913.

Yours, etc.,

JOHN H. MILLER and

WM. K. WHITE,

Attorneys and Solicitors for Plaintiff, Crocker
Building, San Francisco, Cal. [12]

*In the United States District Court for the Northern
District of California, Second Division.*

SEARCHLIGHT HORN COMPANY,

Plaintiff,

vs.

PACIFIC PHONOGRAPH COMPANY,

Defendant.

**Affidavit of Wm. H. Locke, Jr., on Motion for
Preliminary Injunction.**

State of New York,

City and County of New York,—ss.

Wm. H. Locke, Jr., being duly sworn, deposes and
says as follows:

This affidavit is made for use on behalf of complainant in support of a motion for preliminary injunction to be hereafter made in a suit in equity having the above title shortly to be commenced in the District Court of the United States for the Northern District of California, Second Division.

I am president of the Searchlight Horn Company, plaintiff, and owner of the Nielsen patent, No. 771,441, involved in the said proposed suit, and for infringement of which said suit is to be brought.

I became interested in the business of phonographic horns in or about January, 1904, and ever since that time have been connected either directly or indirectly with said business, and am thoroughly familiar with the same, and also with the state of the art as it existed at that time and as it has since been developed. Up to about the year 1907, horns were not made a part of the equipment of the phonograph companies but were manufactured by other parties [13] and supplied by them to the jobbers of phonographs. In other words, the phonograph companies made and sold to jobbers the phonographs themselves and other parties made the horns for such phonographs and sold said horns to the jobbers. This was the state of the business up to some time in the year 1907. Prior thereto, the Searchlight Horn Company had been making and selling to jobbers horns for phonographs containing the Nielsen invention, and had invested large sums of money in said business, selling its horns to various jobbers throughout the United States to be used in connection with phonographs that were made by the phono-

graph companies, and amongst others the National Phonograph Company, controlled by Thomas A. Edison and engaged in the business of making and selling what is known as the Edison phonograph. That some time in the year 1907, or thereabouts, phonograph companies through the United States made the horns a part of their equipment and from that time on sold and do now sell the horn with the phonograph, thereby making it unprofitable for individual horn manufacturers to continue the business as theretofore. In this way the sale of horns became a monopoly with the phonograph companies and the Searchlight Horn Company could no longer continue its business of manufacturing and selling horns at a profit as *therefore*, for the reason that the jobbers were compelled to buy the horns together with the phonographs themselves from the phonograph companies. This forced the Searchlight Horn Company to discontinue the actual manufacture of its horns, and in May, 1908, that company made a business arrangement with other parties to take over its horn manufacturing business, under an agreement for a division of profits, and since that time the Searchlight Horn Company has not been able to make or sell any of its horns though retaining ownership of its patents.

The horns made and sold by the phonograph companies thereafter were largely horns containing the invention of the Nielsen patent and were and still are known to the trade as "Flower Horns," the [14] name originally adopted and applied to the horn by the patentee Nielsen.

When the Searchlight Horn Company discontinued its business of making and selling horns in May, 1908, it endeavored through a long course of negotiations to induce the various phonograph companies, and among them the National Phonograph Company, to make arrangements with the Searchlight Horn Company for payment of a royalty for the use by them of the horns containing the Nielsen invention, having already notified them that the horns which they were making and selling then were an infringement upon said Nielsen patent. The Searchlight Horn Company also endeavored to sell and offered to sell the said patent to the phonograph companies, among them to the National Phonograph Company. These negotiations were carried on for a considerable period of time until September A. D. 1909, when the National Phonograph Company formally and in writing notified the Searchlight Horn Company that no arrangement would be made with the said Searchlight Horn Company for the purchase of the patents, and thereafter the National Phonograph Company continued to infringe upon the Nielsen patent in defiance of the rights of plaintiff by making or causing to be made and selling the so-called Edison Flower Horns.

The Searchlight Horn Company then realized that it *would necessary* to begin legal proceedings against the National Phonograph Company and the other phonograph companies or their distributors for the infringement of the Nielsen patent, and, as president of the Searchlight Horn Company, I interviewed lawyers and endeavored to secure the services of a

patent lawyer, but by reason of the fact that the Searchlight Horn Company was largely in debt and financial distress, I was not able for a long time to secure an attorney who would be willing to undertake the litigation, until in April, 1910, Mr. John H. Miller, an attorney of San Francisco, who was then in [15] New York, was introduced to me by a mutual friend. He stated that he would make a thorough investigation of the matter and if after such investigation he considered that the Searchlight Horn Company had a good case, he would undertake the same. Mr. Miller did make such investigation and amongst other things witnessed the actual demonstration and experiments with various styles of horns, and returned to San Francisco, and commenced an infringement suit there in the month of May, 1911, against Sherman, Clay & Company, the Pacific Coast distributors of the Victor Talking Machine Company. That case was tried in open court in October, 1912, and resulted in a judgment in favor of the Searchlight Horn Company whereby the validity of the Nielsen patent was sustained and damages awarded. I was present at the time of the trial of said case and testified on behalf of the Searchlight Horn Company. After the entry of the judgment, I had personal conferences in New York with representatives of Thomas A. Edison, Inc., the successor of the National Phonograph Company, for settlement of their infringement so that litigation would be avoided, but we were not able to come to terms, and no settlement was effected. Thereupon in March, 1913, the Searchlight Horn Company be-

gan a suit in equity in the above-entitled court at San Francisco against Babson Brothers, charging an infringement of the Nielsen patent by reason of the sale by Babson Brothers of the so-called Edison Horns, which were horns sold by the Edison Company with the Edison phonographs. At the time of commencing said suit, we were informed that Babson Bros. were the sole Pacific Coast distributors of the Edison horns and phonographs, but since then we have been informed that Babson Bros. are only jobbers, and that the Pacific Phonograph Company is the Pacific Coast distributor of the Edison horns and phonographs, for which reason we are now entering suit against said last named company for the purpose of reaching the Edison horns [16] and having the Court determine whether or not they are infringing upon the Nielsen patent. I am informed that the Pacific Phonograph Company is daily supplying and selling to others on the Pacific Coast the so-called Edison horns in connection with the Edison phonographs which said horns contain the invention of the Nielsen patent. If the Pacific Phonograph Company is allowed to continue this course of action pending the suit, the Searchlight Horn Company will be subjected to great and irreparable injury for which in my opinion there is no plain, speedy or adequate remedy at law, and in my judgment a preliminary injunction will be the only adequate protection which the Searchlight Horn Company can obtain. From my experience in litigation I am led to believe that this litigation will be long continued and expensive; that in the ordinary course of events

attending the trial of equity cases it will be a long time before this case can be brought to final hearing, especially in view of the fact that it will be necessary for both sides to take depositions at various places in the United States outside of the Pacific Coast, and then after a decree is entered by this court, if one should be entered, defendant will be entitled to take an appeal therefrom, which would further postpone the time when the complainant could obtain a definite remedy by injunction, whereas, if a preliminary injunction is granted in this case, defendant will either be compelled to cease its infringement and leave the market to complainant, or else will be compelled to obtain its horns from the complainant or some one authorized by the complainant to manufacture under the Nielsen patent. The complainant is and would be willing to supply or cause to be supplied to the defendant and to the Edison Company horns made under the Nielsen patent for a reasonable consideration, and for the payment of a small royalty, whereby the defendant and the Edison Company would be enabled to continue its business without serious damage or loss thereto.

Furthermore there has not been at any time any fixed [17] established royalty for the manufacture and sale of the horns covered by the Nielsen patent, and it is probable that upon the accounting complainant would not be able to prove its damages by such evidence as would be sufficient to clearly establish the same, and will probably be compelled to rely upon a recovery of the defendant's profits, which will involve a long, difficult and intricate proceeding.

Under all these circumstances I think that a preliminary injunction is the only effectual remedy open to the Searchlight Horn Company whereby its rights can be protected. The validity of the Nielsen patent has already been sustained by the verdict of a jury in this court in the case against Sherman Clay & Company, and I am informed that a motion for a new trial in that case has been denied by the Court.

I submit, therefore, that the Searchlight Horn Company is equitably entitled to a preliminary injunction against other parties who are infringing this patent on the Pacific Coast.

WM. H. LOCKE, Jr.

Subscribed and sworn to before me this 1st day of May, 1913.

DANIEL J. BEGLEY,
Notary Public, #406. N. Y. C.

No. 27904.

State of New York,
County of New York,—ss.

I, William F. Schneider, Clerk of the County of New York, and also Clerk of the Supreme Court for the said County, the same being a Court of Record, DO HEREBY CERTIFY, that Daniel J. Begley before whom the annexed deposition was taken, was, at the time of taking the same, a Notary Public of New York, dwelling in said County, duly appointed and sworn, and authorized to administer oaths to be used in any court in said State, and for general purposes; that I am well acquainted with the handwrit-

ing of said [18] Notary, and that his signature thereto is genuine; as I verily believe.

In Testimony Whereof, I have hereunto set my hand and affixed the seal of the said Court and County, the 1st day of May, 1913.

[Seal]

WM. F. SCHNEIDER,

Clerk. [19]

*In the District Court of the United States for the
Northern District of California, Second Di-
vision.*

SEARCHLIGHT HORN COMPANY,

Plaintiff,

vs.

PACIFIC PHONOGRAPH COMPANY,

Defendant.

**Affidavit of John H. Miller, on Behalf of Plaintiff, on
Motion for Preliminary Injunction.**

State of California,

City and County of San Francisco,—ss.

John H. Miller, being first duly sworn, deposes and says as follows:

In April, 1910, I was requested by the Searchlight Horn Company to act as its attorney in prosecuting infringers of the Nielsen patent, No. 771,441, involved in this case. I made quite an extensive investigation into the matter for the purpose of obtaining all possible data and completed these investigations sometime in February, 1911. After completing the same, I accepted employment from the Searchlight

Horn Company and as such attorney began a suit in this court at San Francisco against Sherman Clay & Company for infringement of said patent in May, 1911, the same being intended as a test case. After commencing that suit I notified Thomas A. Edison, Inc., of the same and entered into negotiations with them looking towards a possible settlement of the claim of infringement against Thomas A. Edison, Inc. These negotiations were carried on for some considerable time between myself and the attorney for Thomas A. Edison, Inc., [20] but we were unable to agree upon the terms of a settlement and no settlement was made. While the said suit against Sherman Clay & Company was pending, I notified the attorney for Thomas A. Edison, Inc., of the defenses therein set up so that they might be fully advised in the matter as the suit progressed. The Sherman Clay & Company suit was tried in San Francisco early in October, 1912, and resulted in a verdict for plaintiff, sustaining the patent and awarding damages. Thereafter I notified the attorney for Thomas A. Edison, Inc., of the result in that case and sent him a copy of the Court's charge to the jury, so that he might be still further advised of what had occurred therein, and we again entered into negotiations with one another looking towards a settlement. I hoped that after the validity of the patent had been adjudicated in the test case against Sherman Clay & Company that Thomas A. Edison, Inc., would not further contest the matter, but would make settlement with us so that litigation with that company would be avoided, but we were again unable to come to terms and no settlement was made. Under these circum-

stances, I notified Thomas A. Edison, Inc., or rather the attorneys for that company, that I would be compelled to proceed with the litigation against them. Accordingly, in March, 1913, I began an equity suit in this court against Babson Brothers, Incorporated. Said Babson Brothers, Incorporated, was selling and dealing in Edison phonographs and horns at San Francisco, and I was informed that they were the Pacific Coast distributors of the Edison goods. I afterwards learned, however, that Babson Brothers, Incorporated, was merely a jobber, and that the Pacific Phonograph Company, defendant in the above-entitled case, was the Pacific Coast distributor of the Edison goods. I visited the office and place of business of the Pacific Phonograph Company at San Francisco, and ascertained from parties in charge that said company was and is the Pacific Coast distributor of the Edison goods. I have seen the phonograph horns [21] sold and dealt in on the Pacific Coast by the Pacific Phonograph Company, and the said horns are of substantially the same mechanical construction and mode of operation as the horns which were involved in the suit against Sherman Clay & Company, and there held to be an infringement of the Nielsen patent. I have one of such horns in my possession, and will produce it for the inspection of the Court at the hearing of this motion for preliminary injunction. A comparison of the same with the horns involved in the Sherman Clay & Company case, which are still on file with the Clerk of this Court, will show that so far as concerns the invention involved in the Nielsen patent, the two

sets of horns are of substantially the same mechanical construction and mode of operation. I have seen many of these Edison horns on sale by jobbers and dealers on the Pacific Coast, especially at San Francisco, and am told by said dealers and jobbers that they were purchased from Pacific Phonograph Company, the distributor of the Edison goods on the Pacific Coast. When I visited the place of business of the Pacific Phonograph Company recently, as hereinabove stated, I there saw on public exhibition one of said horns, and was told by the clerks in charge that the Pacific Phonograph Company was engaged in selling and marketing such horns. At that time I received from the party in charge of the Pacific Phonograph Co.'s business a catalogue entitled "Edison Phonographs Cylinder Models," as representative of the cylinder phonographs dealt in by the company, together with the horns attached thereto. I herewith file with the Court the said catalogue then and there received by me, and call the Court's attention to the pictures and cuts of horns appearing on pages 18, 19, 20, 15, 16 and 17. On pages 18 and 19 the cuts represent the "Edison Fireside Phonographs" and "Edison Gem Phonograph," to each of which is attached a horn which we claim to be an infringement of the Nielsen patent and which are of substantially the same [22] construction and mode of operation as the horns involved in the Sherman Clay & Company suit. The horns appearing on pages 15, 16, 17 and 20 are likewise, in my opinion, infringements upon the Nielsen patent, and differ from the horns appearing on pages 18 and 19 only in

the fact that a curved neck or mouth piece is attached to the horn which in no manner affects the question of infringement here involved.

I further state that the infringing horns involved in the action at law against Sherman Clay & Co. in this court hereinabove referred to were horns which had been supplied to Sherman Clay & Co. by the Victor Talking Machine Co. in connection with the Victor Talking Machines (phonographs), and said horns were and are known to the trade as "Victor Flower Horns"; those horns are illustrated in the Victor Trade catalogue on file in this court in a suit in equity against Sherman Clay & Co. (No. 15,623), and a sample thereof was offered in evidence by plaintiff in the action at law against Sherman Clay & Co. as an exhibit and is now on file with the Clerk of the Court. A comparison of those Victor Flower Horns with the Edison Flower Horns will demonstrate that if the former are an infringement of Nielsen's patent then the latter are likewise an infringement, as the two sets of horns are of substantially the same mechanical construction and mode of operation. I claim that the said Edison Flower Horns are infringements upon claims 2 and 3 of the Nielsen patent, but this is not to be construed as an admission that they are not infringements on claim 1 of said patent. I attach hereto a copy of the Nielsen patent.

The reasons why an earlier application for an injunction against further sale of the Edison horns has not been made are these: When I took up the matter of infringements on the Nielsen patent said patent had not been sustained or passed on in any con-

tested suit, and as I did not deem it good policy to commence a [23] multiplicity of suits against a multiplicity of persons I instituted a test case against one person, to wit, the said action at law against Sherman Clay & Company for the purpose of adjudicating the validity of the patent hoping that a favorable decision therein would cause other manufacturers to settle with us and cease infringing on our rights without the expense and delay of further litigation. In this, however, I have been disappointed, although I have afforded to the defendant herein ample opportunity for an amicable settlement. Another reason for delay resides in the fact that after the judgment in the Sherman Clay & Company test case was entered, the defendant therein petitioned the Court for a new trial and that petition was not passed on by the Court until April 21, 1913, at which time it was denied by the Court.

I will add that the records of the Secretary of State of New Jersey show that the corporation now known as Thomas A. Edison, Incorporated, was prior to February 28, 1911, named the National Phonograph Company, and that on said last named day said National Phonograph Company changed its name to Thomas A. Edison, Incorporated.

JOHN H. MILLER.

Subscribed and sworn to before me this 9th day of May, 1913.

[Seal] J. A. SCHAERTZER,
Deputy Clerk, U. S. District Court, Northern Dis-
trict of California. [24]

[Endorsed]:

Copy Patent in Suit

No. 771,441.

October 4, 1904.

Peter C. Nielsen

Date of application

April 14, 1904.

No. 771,441.

PATENTED OCT. 4, 1904.

P. C. NIELSEN.

HORN FOR PHONOGRAPHS OR SIMILAR MACHINES.

APPLICATION FILED APR. 14, 1904.

NO MODEL.

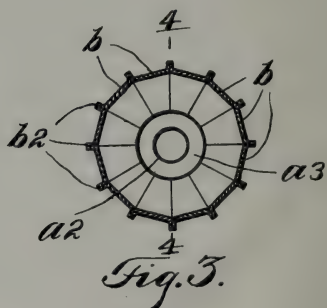
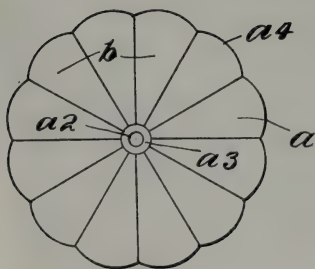
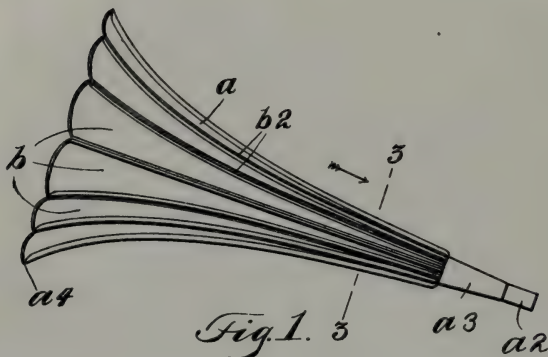


Fig. 2.

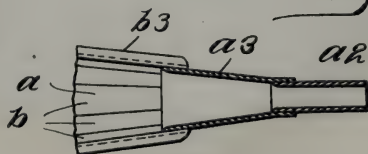


Fig. 4.

WITNESSES

W. B. Mattingly
F. A. Stewart

INVENTOR

Peter C. Nielsen,

Edgar Peters

ATTORNEYS

UNITED STATES PATENT OFFICE.

PETER C. NIELSEN, OF GREENPOINT, NEW YORK.

HORN FOR PHONOGRAPHS OR SIMILAR MACHINES.

SPECIFICATION forming part of Letters Patent No. 771,441, dated October 4, 1904.

Application filed April 14, 1904. Serial No. 203,080. (No model.)

To all whom it may concern:

Be it known that I, PETER C. NIELSEN, a citizen of the United States, residing at Greenpoint, in the county of Kings and State of New York, have invented certain new and useful Improvements in Horns for Phonographs or Similar Machines, of which the following is a specification, such as will enable those skilled in the art to which it appertains to make and use the same.

This invention relates to the horn of a phonograph or other machine of this class; and the object thereof is to provide a horn for machines of this class which will do away with the mechanical, vibratory, and metallic sound usually produced in the operation of such machines, and also produce a full, even, and continuous volume of sound in which the articulation is clear, full, and distinct.

The invention is fully disclosed in the following specification, of which the accompanying drawings form a part, in which the separate parts of my improvement are designated by suitable reference characters in each of the views, and in which—

Figure 1 is a side view of my improved phonograph-horn; Fig. 2, an end view thereof; Fig. 3, an enlarged section on the line 3 3 of Fig. 1, and Fig. 4 a longitudinal section on the line 4 4 of Fig. 3.

In the practice of my invention I provide a horn *a*, provided at its smaller end with the usual nozzle-piece *a'*, by means of which connection is made with the machine, and in the form of construction shown a supplemental piece *a''* is employed between the larger or body portion of the horn and the nozzle-piece *a'*; but the parts *a'* and *a''* may be formed integrally, if desired, and may be constructed in any desired manner. The main part *a* of the horn is bell-shaped in form and tapers outwardly gradually from the part *a'* to the larger or mouth end *a'*, and this curve or taper is greater or more abrupt adjacent to said larger or mouth end. The body portion of the horn is also composed of a plurality of longitudinal strips *b*, which are gradually tapered from one end to the other, and which are connected longitudinally, so as to form longitudinal ribs *b'*, each of the strips *b* being provided at

its opposite edges with a flange *b''*, and these flanges of the separate strips *b* are connected to form the ribs *b'*. The body portion of the horn or the strips *b* are composed of sheet metal, and it will be observed that, the inner wall of the body portion of said horn in cross-section is made up of a plurality of short lines forming substantially a circle, and it is the construction of the body portion of the horn as hereinbefore described that gives thereto the qualities which it is the objects of this invention to produce, which objects are the result of the formation of the horn or the body portion thereof of longitudinal strips *b* and providing the outer surface thereof with the longitudinal ribs *b'* and curving the body portion of the horn, in the manner described. If desired, the part *a'* may be formed integrally with the body portion of the horn, in which event the ribs *b'* would extend to the nozzle or connecting portion *a'*, and it is the longitudinal ribs *b'* which contribute mostly to the successful operation of the horn, said ribs serving to do away with the vibratory character of horns of this class as usually made and doing away with the metallic sound produced in the operation thereof.

My improved horn may be used in connection with phonographs or other machines of this class, and changes in and modifications of the construction described may be made without departing from the spirit of my invention or sacrificing its advantages.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A horn for phonographs and similar machines, the body portion of which is composed of longitudinally-arranged strips of metal provided at their edges with longitudinal outwardly-directed flanges whereby said strips are connected and whereby, the body portion of the horn is provided on the outside thereof with longitudinally-arranged ribs, substantially as shown and described.

2. A horn for phonographs and similar machines, the body portion of which is composed of longitudinally-arranged strips of metal provided at their edges with longitudinal outwardly-directed flanges whereby said strips

are connected and whereby, the body portion of the horn is provided on the outside thereof with longitudinally-arranged ribs, said strips being tapered from one end of said horn to the other, substantially as shown and described.

5 3. A horn for phonographs and similar instruments, said horn being larger at one end than at the other and tapered in the usual manner, said horn being composed of longitudinally-arranged strips secured together at
10 their edges and the outer side thereof at the

points where said strips are secured together being provided with longitudinal ribs, substantially as shown and described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of the subscribing witnesses, this 13th day of April, 1904.

PETER C. NIELSEN.

Witnesses:

F. A. STEWART,

C. J. KLEIN.

RETURN ON SERVICE OF WRIT.

United States of America,
Northern District of California,—ss.

I hereby certify and return that I served the annexed Notice of Motion for Preliminary Injunction and Affidavits on the therein named Pacific Phonograph Co., together with a copy of the Bill of Complaint attached thereto, by handing to and leaving a true and correct copy thereof with A. R. Pommer, the managing owner of said Pacific Phonograph Co., personally, at San Francisco, in said District, on the 9th day of May, A. D. 1913.

C. T. ELLIOTT,
U. S. Marshal.
By Elmo Warner,
Office Deputy.

[Endorsed]: Filed May 10, 1913. W. B. Maling,
Clerk. By J. A. Schaertzer, Deputy Clerk. [27]

*In the District Court of the United States, in and
for the Northern District of California, Second
Division.*

SEARCHLIGHT HORN COMPANY (a Corporation),

Plaintiff,

vs.

SHERMAN CLAY & COMPANY (a Corporation),
Defendant.

Defendant's Petition for a New Trial.

Now comes the said defendant and moves the Court

to set aside the verdict of the jury and to grant a new trial herein, for the following reasons:

1. Insufficiency of the evidence to justify the verdict.

2. That said verdict is against law.

3. Errors of law occurring at the trial.

4. Excessive damages appearing to have been given under the influence of passion or prejudice.

The evidence is insufficient to justify the verdict for the following reasons:

- (a). The evidence shows that the patent did not describe, cover or claim any patentable invention, and that said patent was void for want of novelty and invention.

- (b). The evidence shows that the patentee had taken an old phonographic horn and applied to it a particular form of flanged joint which was the only material difference between the patented horn and several horns of the prior art, and the evidence shows that the defendant had only used such old horn with the same old joint or seam which had been used in the construction of such horns for many years prior to the date of the patent in suit. [28]

- (c). The evidence shows that the defendant was not guilty of infringement, for the reason that the phonographic horns sold by them were made substantially like several old horns of the prior art and did not contain the flanged rib joint covered by the patent, and further shows that the defendant did not infringe either of the claims of the patent in suit.

- (d). The verdict is against law for the reasons above stated.

The errors in law occurring at the trial are as follows:

(1). The Court erred in refusing to grant defendant's motion for a nonsuit at the close of plaintiff's case in chief.

(2). The Court erred in denying defendant's motion to instruct the jury to find a verdict for the defendant made at the close of the taking of the testimony in the case.

(3). The Court erred in instructing the jury that the evidence showed title in the plaintiff sufficient to entitle him to maintain the suit.

(4). The Court erred in instructing the jury that the plaintiff's patented horn was constructed of metal strips secured together at their longitudinal edges by a seam.

(5). The Court erred in instructing the jury that the plaintiff's patented horn was constructed of metal strips secured together at their longitudinal edges by a seam which produces ribs on the outside of the horn.

(6). The Court erred in instructing the jury that the invention actually covered by the patent does not reside in the particular form of the seam which joins the strips together.

(7). The Court erred in instructing the jury that if the same result produced by the flanged seam shown in the patent as joining the metal strips together is obtainable by any usual form of seam known at the time of Neilsen's invention which operates in substantially the same way to produce the same result, [29] then the substitution of such a seam would not be a departure from the invention but

would be within its real and true scope.

(8). After having given the jury an explanation of what is meant by the term invention, the Court erred in then instructing the jury as follows: "No more exact definition can readily be given you of what constitutes invention as distinguished from mere mechanical skill; but there is one established way or rule which can be easily understood and followed in determining that question whenever the facts of the case make it applicable. That rule is, that in a doubtful case, if it appears by the evidence that the patented device has gone into general use and has superseded prior devices having the same purposes, that it is sufficient evidence of invention and will justify a jury in deciding that the patent involves invention and is valid."

(9). The Court erred in instructing the jury as a matter of law that under any circumstances evidence that the patented device had gone into general use and had superseded prior devices having the same purpose was sufficient evidence of invention to justify a verdict sustaining the patent.

(10). The Court erred in instructing the jury in this case that if they found that after the Neilsen horn became known it went into general use and superseded the prior devices having the same purposes, they should find as a matter of law that the said patented horn involved invention.

(11). The Court erred in instructing the jury that unless they found in one of the prior devices or patents in evidence a disclosure and description of the Neilsen invention as heretofore considered by the

Court it would be their duty to find that there was no anticipation of the Neilsen patent by reason of any of these prior devices or patents.

(12). The Court erred in submitting to the jury the question as to whether the lock seam of the prior art was a mechanical [30] equivalent of the flanged or butt seam as a seam and strengthening rib.

(13). The Court erred in instructing the jury that if they found that the lock seam was the mechanical equivalent of the flanged or butt seam that then they should find that the patent was not anticipated.

(14). The Court erred in instructing the jury as follows: "If, therefore, you find that at the time of Neilsen's invention the lock seam was a mechanical equivalent of the flanged or butt seam in the sheet metal art and that they both accomplished the same result in substantially the same manner as the seam and rib when used in phonographic horns, then you must find that the two things are mechanical equivalents and that the defendant is not relieved from the charge of infringement simply because its horns use the lock seam instead of the flanged or butt seam."

(15). The Court erred in its failure and refusal to give the instructions requested by the defendant as follows: Requests No. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, and 15, and also the requests for instructions under the head of anticipation, infringement and damages, and also its refusal to instruct the jury specifically as to the Villey patent.

(16). The Court erred in submitting the question

of actual damages to the jury, for the reason that there was no evidence in the record that the plaintiff had sustained any actual damages.

(17). The verdict is excessive.

(18). The verdict of the jury is contrary to the law and against the evidence.

Said motion will be made upon the pleadings and papers on file in the cause and upon the minutes of the Court and upon the [31] reporter's transcript of his shorthand notes.

N. N. ACKER and
J. J. SCRIVNER,

Attorneys for Defendant.

Due service and receipt of a copy of the within Petition for New Trial is hereby admitted this 14th day of November, 1912.

MILLER & WHITE,
Attorney for Plaintiff.

[Endorsed]: Filed Nov. 15, 1912. W. B. Maling,
Clerk. By J. A. Schaertzer, Deputy Clerk. [32]

At a stated term to wit, the March term, A. D. 1913,
of the District Court of the United States of
America, in and for the Northern District of
California, Second Division, held at the court-
room in the City and County of San Francisco,
on Monday, the 21st day of April, in the year
of our Lord one thousand nine hundred and
thirteen. Present: The Honorable WILLIAM
C. VAN FLEET, District Judge.

No. 15,326.

SEARCHLIGHT HORN CO.

vs.

SHERMAN, CLAY & CO.

Order Denying Petition for New Trial.

Defendant's petition for a new trial heretofore heard and submitted being now fully considered, and the Court having rendered its oral opinion thereon, and it appearing to the Court that the plaintiff at the time of the argument on said petition, in open court, duly waived its right to any money judgment in excess of \$1.00 and costs, it was ordered that said petition for a new trial be, and the same is hereby, denied. [33]

In the United States District Court, Northern District of California, Second Division.

IN EQUITY—No.—.

U. S. Patent 771,441.

SEARCHLIGHT HORN COMPANY,
Plaintiff,

vs.

PACIFIC PHONOGRAPH COMPANY,
Defendant.

**The Answer of Pacific Phonograph Company,
Defendant to the Bill of Complaint of Searchlight Horn Company, Plaintiff.**

To the Honorable, the Judges of the United States District Court for the Northern District of California, Second Division.

This defendant, in answer to the bill of complaint herein, or to so much thereof as it is advised it is material or necessary for it to make answer to, answering, says:

1. This defendant does not know, and is not informed, save by said bill of complaint, whether or not the plaintiff during all the time of the alleged acts of infringement complained of was or still is a corporation created under the laws of the State of New York or having its principal place of business at the city of New York, State of New York, and, therefore denies the same and leaves the plaintiff to make such proof thereof as it may. [34]

2. Defendant admits that its full name is Pacific Phonograph Company and that it has been and still is a corporation created and existing under the laws of the state of California and having its principal place of business at the City and County of San Francisco in the State of California.

3. Defendant does not know, and is not informed, save by said bill of complaint, whether or not on October 4, A. D. 1904, or at any time heretofore the Government of the United States granted, issued or delivered to one Peter C. Nielsen, letters patent of the United States for an alleged new and useful invention, to wit: A horn for phonographs and similar machines, and therefore denies the same, and leaves the plaintiff to make such proof thereof as it may; and defendant denies that letters patent bearing date of October 4, A. D. 1904, and numbered 771,441, granted to said Peter C. Nielsen, his heirs and assigns, the sole or exclusive right to make, use

or vend the said alleged invention throughout the United States of America and the territories thereof during the period of seventeen years from said October 4, A. D. 1904, or for any other time.

4. Defendant does not know, and is not informed, save by said bill of complaint, whether or not on January 4, A. D. 1904, or at any other time heretofore, by an assignment in writing, or otherwise, plaintiff became or that plaintiff has since been or is now the sole owner or holder of said letters patent, or of any rights granted thereby, and defendant, therefore, denies the same and leaves the plaintiff to make such proof thereof as it may.

5. Defendant does not know, and is not informed, save [35] by said bill of complaint, whether or not since said January 4, A. D. 1907, the plaintiff has made or sold devices covered and claimed by said letters patent, or that the plaintiff has marked the word "Patented," together with the date and number of said letters patent upon any such devices; and it, therefore, denies the same and leave the plaintiff to make such proof thereof as it may.

6. Defendant does not know, and is not informed, save by the bill of complaint:

Whether or not on May 9, A. D. 1911, or at any time heretofore, plaintiff commenced an action at law in the above entitled court against Sherman Clay & Company, a corporation created under the laws of the State of California, and doing business in the Northern District of California, or whether or not on said last named day it filed its declaration whereby it alleged the issuance of the aforesaid

letters patent No. 771,441 to Peter C. Nielsen and the ownership thereof by the plaintiff since January 4, A. D. 1907, and that said Sherman Clay & Company had infringed upon said letters patent, whereby plaintiff had been damaged in the sum of Fifty Thousand Dollars (\$50,000), and prayed that judgment be rendered against said Sherman Clay & Company for said damages.

Or whether or not on May 25, A. D. 1911, or at any other time, said Sherman Clay & Company appeared in said action and filed its answer denying all the allegations in said declaration.

Or whether or not thereafter, and within thirty days [36] before the trial of said action, said Sherman Clay & Company filed a notice in writing under section 4920 of the Revised Statutes of the United States, stating that said Peter C. Nielsen was not the first or original or any inventor of the thing patented in and by said letters patent No. 771,441, and that long prior to the supposed invention thereof by said Peter C. Nielsen the thing patented in and by the said letters patent No. 771,441 was shown, described and patented in and by certain prior letters patent of the United States and of Great Britian, specified by given numbers, and that prior to the supposed invention of said Peter C. Nielsen, the thing patented in and by said letters patent No. 771,441 had been made, used and sold by, and was known to others in this country; or whether or not the names of such persons alleged to have had such knowledge and use, together with the places

where the same was used, were set up in detail in said notice.

Or whether or not upon any issue joined the said action at law against Sherman Clay & Company came on for trial before the above-entitled court and a jury, or whether or not evidence was introduced by either side and the case fully and thoroughly tried on its merits, or whether or not after argument by counsel on either side, the case was submitted to the jury for decision.

Or whether or not thereafter on October 4, A. D. 1912, or at any other time, said jury returned its verdict in favor of the plaintiff in said action and against said Sherman Clay & Company, or assessed damages in favor of said [37] plaintiff and against said defendant or at the sum of Three Thousand Five Hundred Seventy-eight Dollars (\$3,578).

Or whether or not a judgment was duly made and entered in favor of said plaintiff and against said Sherman Clay & Company or for the said sum of Three Thousand Five Hundred Seventy-eight Dollars (\$3,578) or costs of suit.

Or whether or not plaintiff petitioned said Court for a new trial or whether or not said motion was denied.

Or whether or not thereafter the plaintiff in said suit remitted voluntarily or otherwise from the amount of said damages all of said damages over and above the sum of One Dollar (\$1.00), or whether or not said judgment has never otherwise

been changed, altered or modified or is still in full force and effect.

Defendant therefore denies the averments recited in section 7 of the bill of complaint and leaves the plaintiff to make such proof thereof as it may.

7. Defendant further answering denies that since February 1, A. D. 1909, or at any other time, it, the defendant herein, without the license or consent of the plaintiff, in the Northern District of California or elsewhere, has used or sold, or is now using or selling, horns for phonographs containing or embracing the alleged invention of said letters patent No. 771,441, or that it has committed or is now committing any acts of infringement or otherwise in violation of any rights of the plaintiff under and by virtue of said letters patent.

Defendant further denies that it has realized or [38] is now realizing any profits, or that the plaintiff has suffered or is suffering any damages from or due to any act or acts of infringement or otherwise in violation of any rights of the plaintiff under and by virtue of said letters patent.

8. Defendant further denies that the plaintiff has requested it, the defendant, to desist from infringement of said letters patent or to account to the plaintiff for any damages that have been suffered by the plaintiff or profits that have been realized by defendant from and by reason of any infringement of said letters patent; and defendant further denies that it has failed or refused to comply with any such request or with any part thereof, and denies that it has at any time infringed said

letters patent; and defendant denies that it is now selling or has ever sold horns in infringement of said letters patent No. 771,441.

9. Defendant further denies that it threatens or intends or has threatened or intended to continue during pendency of this suit or at any other time any act or acts of infringement or otherwise in violation of any right of the plaintiff under and by virtue of said letters patent, and denies that the plaintiff has suffered any injury from any act or acts unlawfully committed by defendant.

10. Defendant alleges, on information and belief, that the alleged improvement in horns for phonographs or similar machines described and claimed in said letters patent No. 771,441 was not an invention at the time when [39] it was produced; that there was no new function or mode of operation or result attained thereby; that there was nothing substantially new therein, and that in view of the state of the art at the date of the alleged invention, it did not require the exercise of any inventive faculty to devise and produce the horn for phonographs or similar articles described and claimed in said letters patent, but merely the exercise of mechanical skill, and that at the time of the alleged invention by the said Peter C. Nielsen and his application for said letters patent, the state of the art was such that there was nothing of patentable novelty in the said alleged improvement in horns or similar machines for phonographs or in any part thereof.

11. Defendant alleges that said Peter C. Nielsen failed to apply to the Commissioner of Patents of

the United States for said letters patent No. 771,441 in manner and form as by statute required, and that he failed to prosecute an application for said letters patent under and in conformity with the law in such cases made and provided.

12. Defendant alleges, on information and belief, that while the application for said letters patent No. 771,441 was pending in the United States Patent Office, the applicant for the said patent so limited and confined the claims of said application that the plaintiff cannot now seek for or obtain a construction for such claims, or any of them, sufficiently broad to cover the construction used and sold by the defendant. [40]

13. Defendant further alleges, on information and belief, that said letters patent No. 771,441 are invalid and void for the reason that the said Peter C. Nielsen was not the original, first or sole inventor or discoverer of the alleged improvement therein described and claimed or of any material and substantial part thereof, and that substantially the same horn for phonographs or similar machines, and all the material parts thereof, and everything alleged to be new or of invention in said letters patent No. 771,441, are clearly shown and described in and by certain patents granted or applied for prior to the alleged invention thereof by said Peter C. Nielsen, or more than two years prior to his said application for patent therefor, and also in certain printed publications published prior to the alleged invention thereof by the said Peter C. Nielsen, or more than two years prior to his said application for patent therefor; and

that said patents and printed publications, together with the dates of the grant and publication thereof, are as follows:

UNITED STATES LETTERS PATENT.

No. 72,422, dated December 17, 1867, to George S. Saxton.

No. 165,912, dated July 27, 1875, to William H. Barnard.

No. 181,159, dated August 15, 1876, to Charles W. Fallows.

No. 187,589, dated February 20, 1877, to Emil Boesch.

No. 216,188, dated June 3, 1879, to Thomas W. Irwin et al.

No. 240,038, dated April 12, 1881, to Nathaniel C. Powelson, et al.

No. 274,930, dated April 3, 1863, to Isaac P. Frink.

No. 276,251, dated April 24, 1883, to Philip Lesson.

[41]

No. 320,424, dated June 16, 1885, to George W. Woodward.

No. 337,971, dated March 16, 1886, to Henry McLaughlin.

No. 362,107, dated May 3, 1887, to Charles R. Penfield.

No. 406,332, dated July 2, 1889, to James C. Bayles.

No. 409,196, dated August 20, 1889, to Charles L. Hart.

No. 427,658, dated May 13, 1890, to James C. Bayles.

No. 453,798, dated June 9, 1891, to Augustus Gersdorff.

- No. 455,910, dated July 14, 1891, to William J. Gordon.
- No. 491,421, dated February 7, 1893, to Augustus Gersdorff.
- No. 534,543, dated February 19, 1895, to Emile Berliner.
- No. 578,737, dated March 16, 1897, to Philip J. Haas.
- No. 612,639, dated October 18, 1898, to James Clayton.
- No. 648,994, dated May 8, 1900, to Major D. Porter.
- No. 651,368, dated June 12, 1900, to John Lanz.
- No. 692,363, dated February 4, 1902, to Walter C. Runge.
- No. 699,928, dated May 13, 1902, to Charles McVeety, et al.
- No. 705,126, dated July 22, 1902, to George Osten, et al.
- No. 738,342, dated September 8, 1903, to Albert S. Marten.
- No. 739,954, dated September 29, 1903, to Gustave Harman Villy.
- No. 769,410, dated September 6, 1904, to E. A. Schoettel.
- No. 770,024, dated September 13, 1904, to Bartolo Ruggiero et al.
- No. 763,808, dated June 28, 1904, to Hollister Sturges.

PRINTED PUBLICATIONS.

The Electrical World, published at New York, N. Y., article on "Berliner Gramophone," pp. 255-256, issue of Nov. 12, 1887, and article on "The Improved Gramophone," p. 80, issue of August 18, 1888.

A paper read before the Franklin Institute, May 16, 1888, on the Gramophone, by Emile Berliner, published in the Journal of the Franklin Institute at Philadelphia, Pa., [42] June, 1888, and by Rufus H. Darby, printer, in 1894, at Washington, D. C.; and many other publications describing Scott's Phonautograph of 1857.

UNITED STATES LETTERS PATENT FOR
DESIGNS.

No. 8,824, dated December 7, 1875, to Frederick S. S. Shirley.

No. 10,235, dated September 11, 1877, to Edward Cairns.

No. 34,907, dated August 6, 1901, to McVeety et al.

UNITED STATES REGISTERED TRADE-
MARK.

No. 31,772, registered July 5, 1898, by John Kaiser.

BRITISH LETTERS PATENT.

No. 9,762, dated July 5, 1888, to Charles Adams Randall.

No. 14,730, dated 1903, to

No. 17,786, dated August 13, 1902, to Henry Fairbrother.

No. 20,146, dated September 15, 1902, to Gustave Harman Villy.

No. 20,567, dated September 20, 1902, to John Mesby Tourtel.

No. 22,273, dated November 5, 1901, to Walter C. Runge.

No. 22,612, dated November 13, 1899, to George L. Hogan.

No. 7,594, dated April 24, 1900, to William Phillips Thompson.

BELGIAN LETTERS PATENT.

No. 157,009, dated June 10, 1901, to Walter C. Runge.

No. 163,518, dated May 27, 1902, to Walter C. Runge.

No. 175,354, dated January 29, 1904, to L. Aneion.

No. 175,785, dated March 1, 1904, to A. Combret.

No. 176,179, dated March 19, 1904, to H. Sieger.

[43]

FRENCH LETTERS PATENT.

No. 301,583, dated June 23, 1900, to Jose Guerrero.

No. 318,742, dated February 17, 1902, to M. Turpin.

No. 31,470, dated March 25, 1857, to Leon Scott, and
certificate of addition thereto, dated
July 29, 1859.

PRINTED PUBLICATIONS.

The printed copies of the specifications of the aforesaid several Letters Patent of the United States published by the Patent Office of the United States in the city of Washington, in the District of Columbia, on the dates corresponding with the respective dates of said letters patent of the United States and the printed copies of the specifications of the aforesaid British letters patent published by the Patent Office of Great Britain in the city of London, England, on the dates corresponding with the respective dates of printed publication of the complete specifications of the said several British patents, and the printed copies of the specifications of the aforesaid French

letters patent published by the Patent Office of France in the city of Paris, France, on the dates corresponding with the respective dates of publication of the specifications of the said several French patents.

14. Defendant further alleges, on information and belief, that the alleged improvements in horn for phonographs and similar machines described and claimed in said letters patent No. 771,441, and all material and substantial parts thereof were, prior to the date of the alleged invention thereof by said Peter C. Nielsen or more than two years prior to his said application for patent therefor, invented [44] by, known to, and in public use or on sale by the following named persons and parties at the following-named places, to wit:

John Kaiser of New York, N. Y., at New York, N. Y., and elsewhere.

C. A. Senne of New York, N. Y., at New York, N. Y., and elsewhere.

Henry Staude of New York, N. Y., at New York, N. Y., and elsewhere.

Edward A. Merritt of New York, N. Y., at New York, N. Y., and elsewhere.

Bettini Phonograph Company of New York, N. Y., at New York, N. Y., and elsewhere.

Edison Manufacturing Company of West Orange, N. J., West Orange, N. J., New York, N. Y., and elsewhere.

Walcutt, Miller & Co. and Cleveland Walcutt, of New York, N. Y., at New York, N. Y.

Judge Publishing Company of New York, N. Y.,
at New York, N. Y., and elsewhere.

Harms, Kaiser & Hagen of New York, N. Y., at New
York, N. Y., and elsewhere.

Thomas A. Edison of West Orange, N. J., at West
Orange, N. J., and elsewhere.

Mrs. Warren of Buffalo, N. Y., at Buffalo, N. Y.,
and elsewhere.

Louis Atz of New York, N. Y., at New York, N. Y.,
and West Orange, N. J., and elsewhere.

Peter Bacigalupi, of San Francisco, Cal., at San
Francisco, Cal., and elsewhere, and I. W. Nor-
cross of San Francisco, Cal., at New York, N.
Y., and elsewhere.

Edward A. Schoettel of Brooklyn, N. Y., at Brook-
lyn, N. Y., New York, N. Y., and elsewhere.

[45]

George S. Saxton of St. Louis, Missouri, at said St.
Louis, and elsewhere.

William H. Barnard of Sedalia, Missouri, at said
Sedalia, and elsewhere.

Charles W. Fallows of Philadelphia, Pennsylvania,
at said Philadelphia and elsewhere.

Ellsworth A. Hawthorne, of Bridgeport, Conn., at
Philadelphia, Pa., and elsewhere.

Horace Sheble, of Philadelphia, Pa., at said Phila-
delphia and elsewhere.

Emil Boesch of San Francisco, California, at said
San Francisco and elsewhere.

Thomas W. Irwin of Alleghany, Pennsylvania, at
said Alleghany and elsewhere.

George K. Reber of Pittsburg, Pennsylvania, at said Pittsburg and elsewhere.

Nathaniel C. Powelson of Brooklyn, New York, at said Brooklyn, and elsewhere.

Charles Deavs of New York, New York, at said New York and elsewhere.

Isaac P. Frink of New York, New York, at said New York and elsewhere.

Philip Lesson of Newark, New Jersey, at said Newark and elsewhere.

George W. Woodward of Brooklyn, New York, at said Brooklyn and elsewhere.

Henry McLaughlin of Bangor, Maine, at said Bangor and elsewhere.

Charles R. Penfield of Rochester, New York, at said Rochester and elsewhere.

James C. Bayles of New York, New York, at said New York and elsewhere.

Charles L. Hart of Brooklyn, New York, at said Brooklyn and elsewhere. [46]

Augustus Gersdorff of Bridgeton, New Jersey, at said Bridgeton and elsewhere.

William J. Gordon of Philadelphia, Pennsylvania, at said Philadelphia and elsewhere.

Augustus Gersdorff of Washington, District of Columbia, at said Washington and elsewhere.

Philip J. Haas of Marengo, Iowa, at said Marengo and elsewhere.

James Clayton of New York, at said New York and elsewhere.

Major D. Porter of New Haven, Connecticut, at said New Haven and elsewhere.

John Lanz of Pittsburg, Pennsylvania, at said Pittsburg and elsewhere.

Charles McVeety of Philadelphia, Pennsylvania, at said Philadelphia and elsewhere.

John F. Ford of Philadelphia, Pennsylvania, at said Philadelphia and elsewhere.

George Osten of Denver, Colorado, at said Denver and elsewhere.

William P. Spaulding of Denver, Colorado, at said Denver and elsewhere.

Bartolo Ruggiero and Gaetano Bongiorrio of Brooklyn, N. Y., at said Brooklyn, and elsewhere.

Hollister Sturges of New York, N. Y., at said New York and elsewhere.

Albert S. Martin of East Orange, New Jersey, at said East Orange and at Newark, N. J. and elsewhere.

Frederick S. Shirley of New Bedford, Massachusetts, at said New Bedford and elsewhere.

Edward Cairns of Morristown, New Jersey, at said Morristown and elsewhere. [47]

Walter H. Miller of Orange, New Jersey, at New York, N. Y., West Orange, N. J., and elsewhere.

Alexander N. Pierman of Newark, New Jersey, at West Orange, New Jersey and elsewhere.

Edward W. Meeker at Orange, New Jersey, at West Orange, New Jersey, and elsewhere.

Harvey N. Emmons of East Orange, New Jersey, at West Orange, New Jersey and elsewhere.

Arthur Collins of New York, New York, at West Orange, New Jersey and elsewhere.

John Riley of West Orange, New Jersey, at said West Orange and elsewhere.

James Burns of West Orange, New Jersey, at said West Orange and elsewhere.

Frederick S. Brown of Montclair, New Jersey, at West Orange, New Jersey and elsewhere.

C. J. Eichhorn of Newark, New Jersey, at said Newark and elsewhere.

Leonard Terhune of Orange, New Jersey, at Newark, New Jersey, and elsewhere.

George C. Magill of Newark, New Jersey, at said Newark and elsewhere.

Peter Schoepple of Newark, New Jersey, at said Newark and elsewhere.

John H. B. Conger of Newark, New Jersey, at said Newark and elsewhere.

Thomas H. Brady of New Britain, Connecticut, at said New Britain and elsewhere.

August Doig of New Britain, Connecticut, at said New Britain and elsewhere. [48]

William J. Noble of New Britain, Connecticut, at said New Britain and elsewhere.

James Connelly of New Britain, Connecticut, at said New Britain and elsewhere.

Thomas A. Edison, Incorporated, (formerly named National Phonograph Company) a corporation organized and existing under and by virtue of the laws of the State of New Jersey and having its principal place of business in West Orange in said State at said West Orange and elsewhere.

John W. George, of Bridgeport, Conn., at Philadelphia, Pa., and elsewhere.

Tea Tray Company, a corporation organized and existing under and by virtue of the laws of the State of New Jersey and having its principal place of business in Newark in said State, at Newark and elsewhere.

Noble & Brady of New Britain, Connecticut, at said New Britain and elsewhere.

New Jersey Phonograph Company, a corporation organized and existing under and by virtue of the laws of the State of New Jersey and having its principal place of business in Newark in said State at said Newark and elsewhere.

North American Phonograph Company, a corporation organized and existing under and by virtue of the laws of the State of New Jersey and having its principal place of business in Jersey City in said State at said Jersey City and elsewhere.

15. Defendant further says that it has been diligent in ascertaining and setting forth herein instances of prior knowledge, invention, public use, publication and [49] patenting of the invention set forth and claimed in said letters patent No. 771,441, yet believes many further instances exists and prays leave to add the same when ascertained.

16. Defendant alleges that for the purpose of deceiving the public, the description and specification of the alleged invention filed by the said Nielsen in the Patent Office was made to contain less than the whole truth relative to his alleged invention or discovery, and that the description of the alleged invention in the specification is not in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it appertains to make,

construct and use the same.

17. Defendant further alleges, on information and belief, that said letters patent No. 771,441 are invalid and void, because the alleged invention attempted to be patented thereby was at the time it was produced and is now without utility.

18. Defendant further avers and states that the claims as issued in said letters patent No. 771,441 are not distinct, in that they do not particularly point out and distinctly claim the part, improvement, or combination which the said alleged inventor claims as his invention or discovery.

19. Defendant further alleges, on information and belief, that said letters patent No. 771,441 are invalid and void because the alleged invention attempted to be patented [50] thereby had been abandoned to the public prior to the date of the application for said letters patent.

And now, this defendant having answered all and singular those portions of the bill of complaint that it is material and necessary to answer, denies all and all manner of things in the said bill alleged which are not hereinbefore specifically answered unto; and it prays to be hence dismissed with its reasonable costs and charges herein most wrongfully sustained.

PACIFIC PHONOGRAPH COMPANY.

By A. R. POMMER,
President.

Solicitors for Defendant,

H. C. SCHAERTZER and
D. HADSELL.

LOUIS HICKS,

Of Counsel for Defendant. [51]

State of California,

City and County of San Francisco,—ss.

A. R. Pommer, being duly sworn, deposes and says that he is the president of Pacific Phonograph Company, a corporation organized and existing under the laws of the State of California, defendant in the above-entitled suit; that he has read the foregoing answer and knows the contents thereof and that the same is true to his knowledge, except as to the matters which are therein stated to be alleged on information and belief, and that as to those matters he believes it to be true.

A. R. POMMER.

Sworn and subscribed to before me this 29th day of May, 1913.

[Seal]

J. D. BROWN,

Notary Public, County of San Francisco, State of California.

Copy of within answer received May 29th, 1913.

MILLER & WHITE,

Attys. for Plff.

[Endorsed]: Filed May 29, 1913. W. B. Maling,
Clerk. By J. A. Schaertzer, Deputy Clerk. [52]

[Affidavit of Ellsworth A. Hawthorne.]

District Court of the United States, Northern District of California, Second Division.

EQ. No. 18.

SEARCHLIGHT HORN COMPANY,
Plaintiff,

vs.

PACIFIC PHONOGRAPH COMPANY,
Defendant.

EQ. No. 7.

SEARCHLIGHT HORN COMPANY,
Plaintiff,

vs.

BABSON BROS., INC.,
Defendant.

State of Connecticut,
County of Fairfield,—ss.

Ellsworth A. Hawthorne, being duly sworn, deposes and says: I am over the age of twenty-one years and reside in Bridgeport, county of Fairfield and State of Connecticut. I am president of the Hawthorne Manufacturing Company, Inc., located at Howard Avenue and Spruce Street in Bridgeport aforesaid.

For a number of years prior to 1900 I was located in the city of Philadelphia, Pennsylvania, and was the senior member of the firm of Hawthorne and Sheble of that city, which firm was engaged in the talking machine business, manufacturing and selling

talking machine supplies including horns for phonographs and similar machines. On April 20, [53] 1900, said firm of Hawthorne and Sheble was incorporated as the Hawthorne and Sheble Manufacturing Company, Inc., which carried on the same business as its predecessor up to the year 1909 or until shortly before I moved to Bridgeport and founded my present Company, the aforesaid Hawthorne Manufacturing Company. In October, 1894, the firm of Hawthorne and Sheble purchased from Edward F. Leeds the good will of the phonograph business theretofore done by him in the City of Philadelphia, as agent of John R. Harden, receiver of the North American Phonograph Company, together with all the goods, stock and fixtures of said business which were at 604 Chestnut Street, Philadelphia, including phonographs, phonograph supplies, musical records and phonograph parts of which horns for phonographs formed a part and made, with said Edward F. Leeds, by a contract in writing, dated in October, 1894, certain business arrangements. The firm of Hawthorne and Sheble began the manufacture of horns for phonographs in the latter part of 1894 or the early part of 1895, said Leeds protesting at the time that we did not purchase our large horns from him, and I have been engaged in the making of horns for phonographs and like purposes ever since. I have made hundreds of thousands of horns.

Beginning in the latter part of 1894 or the early part of 1895 and during the years 1895, 1896, 1897, 1898 and 1899, the firm of Hawthorne and Sheble made horns for phonographs and like purposes,

said horns consisting of tapering metal strips joined together at their edges by the well-known tinsmith's seam—namely—the seam known as the lock seam made by bending over the adjoining edges of the tapering metal strips, then interlocking the bent-over portions and pressing them tightly together, the seam being the same as that employed for joining together the metal [54] strips composing the metal horns made and sold by Thomas A. Edison, Inc. These tapering trips joined together at their edges by lock seams extended from one end of the horn to the other. The horns were of different sizes having lengths of thirty-six inches, of forty-eight inches and lengths less than thirty-six inches and greater than forty-eight inches. The tapering strips of which these horns were made by me and my said firm, Hawthorne and Sheble, during the years 1895–1899, inclusive, were so shaped and joined together at their edges by the tinsmith's or lock seam aforesaid that the horns were bell-shaped, being very narrow at the small end and very wide and flaring at the large end. For example, one of our horns thirty-six inches long would have an opening at the large end of the horn thirty-six inches in diameter. When the horns were quite small, say about twenty inches in length, only two of the tapering strips were employed to make the horn, but in making the larger horns at least four of the tapering strips of metal, joined together at their edges by lock seams were employed and at times a greater number of tapering strips so joined together were employed. The horns made of two

strips had two longitudinal ribs, and the horns made of four or more strips had four or more longitudinal ribs, said ribs extending from one end of the horn to the other and being formed by the tinsmith's or lock seam aforesaid. Said horns were made of different kinds of metal such as aluminum, brass, copper, etc. It was more economical to manufacture the horns of several tapering strips of metal, say four or more, than to make the horn of a single piece or of two pieces of metal, since an oblong rectangular piece of metal could be cut diagonally into two tapering strips each of which strips could be used in the making of the horn without waste of the metal. For this reason it was more economical to construct the horns [55] of several tapering strips of metal, say four or more tapering strips, than to construct the horn of one or two pieces of metal and this economy was especially great in the case of the larger horns. Horns made of several tapering strips of metal were known as "built up horns" since they were built up of the several tapering strips of metal in the manner described. The firm of Hawthorne and Sheble began the manufacture of such built up horns as early as 1895.

In 1898-1899 I bought the first Graphophone Grand talking machine put out by the American Graphophone Company, paying about five hundred dollars (\$500.00) for it, and at that time and before 1900 I made horns for use with said Graphophone Grand talking machines. These horns were made in the manner described above. They were built up of tapering strips of metal extending from one end of

the horn to the other, joined together at their edges by the tinsmith's or lock seam. Four or five of such tapering strips of metal were used in the construction of each horn. These horns were thirty-six inches long and had an opening at the large end of the horn thirty-six inches in diameter, the large end of the horn flaring and the horn being bell-shaped.

In 1898, at the time of the Spanish-American war, I and my said firm made two large horns or megaphones which, as I was informed, were intended for use on two of the United States battleships, the Iowa and the Oregon, according to my present recollection of the names of these battleships. These two large horns or megaphones were each about fourteen feet long. They were made in the manner above described, consisting of five or six tapering sheets of metal extending from one end of the horn to the other and joined together at their edges by the tinsmith's or lock seam forming longitudinal ribs extending from one end of the horn to the other. The only difference between these two large horns or megaphones and the other horns composed [56] of several tapering strips, above described was that the two megaphones were of greater size.

I still have the machine used by the said firm of Hawthorne and Sheble in the manufacture of the horns as above described, previous to the year 1900 when the firm was incorporated.

I still have in my possession a metal horn manufactured by my said firm of Hawthorne and Sheble prior to the year 1900. Upon it is marked "Exhibit B, John H. George, Ellsworth A. Hawthorne"; and

hereto annexed is a photographic copy of the said horn. In 1898 or 1899 my said firm of Hawthorne and Sheble made a number of horns like the horn marked in the manner stated. The horn consisted of five tapering strips of metal joined together at their edges so as to form longitudinal ribs extending from one end of the horn to the other. This horn, however, is different from those above described in that the ribs are on the inside instead of on the outside of the horn and in that each of the tapering strips of metal is curved so as to form, by itself, a part of a cone, the five partial cone parts being joined together to form the horn. The metal piece holding the small ring for the support of the horn bears the letters "H. S.," which are the initials of the firm of Hawthorne and Sheble. This horn, of which a photograph is hereto annexed, has been temporarily placed in the custody of defendant's counsel, Mr. Louis Hicks, for the purposes of this suit.

My said firm of Hawthorne and Sheble, during the years 1898, 1899 and 1900 made and sold many horns made of glass for use with phonographs, graphophones or other talking machines. These horns made of glass were shaped to simulate a morning glory and were decorated with morning glories. [57] They were flower horns in shape. Beginning with the year 1900 they were made and sold by the Hawthorne and Sheble Mfg. Co., Inc. I annex hereto a photograph of a circular printed and published in 1900 in Philadelphia by the Hawthorne and Sheble Mfg. Co. The circular is one which I happened to retain in my possession and which has been

submitted to Mr. Louis Hicks for the purposes of this suit. The circular bears the writing "Morning glory Flower Horns—Flower—Printed in 1900—Exhibit A, E. A. Hawthorne," in my handwriting in addition to the printed matter. Prior to the year 1900 my said firm of Hawthorne and Sheble made and sold many other horns similar in shape to the glass horns shown and described upon said circular, but made of metal. These metal horns were made up of longitudinally-extending tapering strips of sheet metal, which were joined together at their edges by the tinsmith's seam, constituting external longitudinal stiffening ribs extending from one end of the horn to the other in the manner above described.

The method of constructing horns, consisting in uniting longitudinally-extending tapered strips of sheet metal along their edges by means of seams, such as the tinsmith's or lock seam, forming longitudinal ribs extending from one end of the horn to the other, was well known and in common use long prior to 1900 as an ordinary tinsmithing operation familiar to us and to other manufacturers of metal goods including the manufacture of metal horns.

My said firm of Hawthorne and Sheble dealt in the well-known Kaiser horn at the time when the originator and maker of said Kaiser horns was a member of the firm of Harms, Kaiser and Hagen during the years 1899 and 1900, said firm of Harms, Kaiser and Hagen being located in the City of New York. The said Kaiser horns, in which we dealt, were made of tapering strips of tough leatheroid paper, overlapping and secured together at their

edges by glue. The [58] overlapping edges thus secured together formed longitudinal ribs extending from one end of the horn to the other, which reinforced or strengthened the horn. The Kaiser horn was an excellent horn for use with the phonograph in reproducing sound records, was very popular, and was sold in large quantities.

The method of constructing the horns for phonographs and similar horns by means of tapered strips of suitable material such as metal, paper, wood, celluloid, etc., secured together at their edges so as to form longitudinal ribs on the outside of the horn, extending from one end of the horn to the other was well known and was practiced by my said firm of Hawthorne and Sheble and by others in this country prior to the year 1900, to my knowledge. When the tapering strips were made of metal, the strips were secured together at their edges by the tinsmith's or lock seam or by some other similar method known in the tinsmith's trade. When material like wood or paper was used the edges of the tapered strips were secured together in a manner suitable for such material as by gluing the overlapping edges, as in the Kaiser horn, or by securing the edges together by means of ribs of wood or metal and with the aid of an adhesive material such as glue, as shown in French patent No. 318,742 of February 17, 1902, to Turpin. The use of glue with wood, paper, celluloid and the like is obviously the same as the use of solder or the tinsmith's lock seam when metal is employed. For many years prior to 1900 horns for phonographs and similar horns were made of metal, of paper, of wood,

of celluloid and of other material such, for instance, as glass. The bell-shaped horn was in common use in this country prior to the year 1900. Various methods were employed in constructing the said horns, the methods being adapted to the material used. It was common practice in this country prior to 1900 to construct horns of tapering strips, of material of different kinds, [59] secured together at their edges so as to form longitudinal ribs extending from one end of the horn to the other and to form, by this method, horns of bell shape, narrow at the small end of the horn and flaring at the large end of the horn.

I have made a careful study of the construction and sound producing qualities of horns for phonographs for nearly twenty years. It is my opinion, based upon many tests, and long experience, that there is no difference in the sound producing qualities of a horn, whether of metal or other material, resulting from the use of one longitudinal rib and from the use of two or more longitudinal ribs. I attribute the perfection of the sound-producing qualities of a horn to its length [and inside [E. A. H.] cubical dimensions] and not at all to any longitudinal ribs with which it may or may not be provided and not at all to the thickness of the material of which the horn may be constructed. The best horns for phonographs with which I am familiar were concert horns made by me for my said firm of Hawthorne and Sheble in Philadelphia in the year 1896. These horns were fifty-six inches long. They were made of four or five

tapering strips of metal (brass) brazed together (that is soldered together) at their edges. The tapering strips extended from one end of the horn to the other. The horns were narrow at the small end and flaring at the large end and of a bell shape, the sides curving gradually outwardly from the small end to the flaring end of the horn. As the edges of the several tapering strips of which these fifty-six inch concert horns were made were brazed together, the edges did not overlap. The method of brazing together the edges of metal strips was, in 1896, the well-known equivalent of joining together such edges by means of any of the other well-known tinsmith's seams such, [60] for instance, as the lock seam. In this instance I preferred brazing the edges together, but in other instances referred to I joined the edges together by the lock seam.

Mr. Louis Hicks, counsel for defendant herein, has exhibited to me two horns which he informed me had been handed to him by Mr. Walter H. Miller, with whom I am well acquainted. These horns are about twenty-one inches long and are made of two tapering strips joined together at their edges by lock seams and a somewhat flaring large end made of two tapering strips similarly joined together by lock seams, the flaring end being joined to the other end of the horn by a similar seam extending around the circumference of the horn. One of these two horns has its small end cut off at about six inches from the small end of the horn, in order, as I am informed, that it might be used as a megaphone for making announcements at the beginning of the recording of phono-

graph records. To my knowledge such horns were upon the market in this country for many years prior to 1900 and were used with phonographs as phonograph horns for reproducing sounds from phonograph records. The lock seams shown by said two horns were the lock seams employed by me in the construction of horns made of tapering strips joined together at their edges, as above described. It is to be understood, however, that in making metal horns of tapering strips joined together at their edges by lock seams I employed tapering strips that extended from one end of the horn to the other.

My attention has been called to an illustration on page 70 of the book entitled "A Complete Manual of the Edison Phonograph," by George E. Tewksbury, published at Newark, New Jersey, by the United States Phonograph Company in 1897. Some of the horns are pyramids with four sides, each side being [61] a tapering strip of metal. Each angle of the horn is a rib or reinforcement. The topmost horn of the illustration shows that the flaring end of the horn is composed of at least three tapering strips of metal secured together at their edges by lock seams. The illustration shows that the lock seam was generally used in joining together the tapering metal strips of which the horns shown in the illustration were constructed. In the center of the illustration there is shown a horn which appears to be a Kaiser horn.

Upon the incorporation of the Hawthorne & Sheble Mfg. Co., Inc., aforesaid, that corporation continued the business carried on by the firm of Hawthorne & Sheble, as already stated. And it continued from

the time of its incorporation until much later than February 10, 1906, to manufacture and sell, for use with talking-machines, such metal horns formed of longitudinally-tapering sections of sheet-metal joined by external longitudinal ribs. There are in existence at the present time specimens of the aforesaid sectional metal horns and of the glass horns of similar shape. We sold and delivered a great many of our said sectional metal horns to the American Graphophone Co., Bridgeport, Connecticut, and to its sales agents, the Columbia Phonograph Co.

February 10, 1906, said Hawthorne & Sheble Mfg. Co. was located at Oxford and Mascher Streets, in Philadelphia aforesaid. On or about that date we received a visit from a patent attorney named William H. Locke, Jr., of No. 46 West 34th Street, New York City, who represented himself as the attorney for the United States Horn Co., which claimed to own a certain Villy patent and the Nielsen patent No. [62] 771,441, which I understand is the patent involved in this controversy. Said Locke told us that the owners of said patents desired our company to enter into a combination with them, and that his clients would license certain manufacturing concerns, including the Hawthorne & Sheble Mfg. Co., the Tea Tray Co., and the Standard Metal Goods Mfg. Co., under said patents. After examining the two patents aforesaid, and upon the advice of our patent counsel, we notified Mr. Locke that we would not enter into such combination. We further told him we would not recognize the validity of the Nielsen patent aforesaid; but were ready to litigate said patent

if its owners so desired. We never heard anything further from Mr. Locke, or from anyone else on behalf of said Nielsen patent; nor were we ever attacked as alleged infringers of said Nielsen patent, though we continued to manufacture and sell the sectional metal horns aforesaid.

I annex hereto a copy of an advertisement of the Hawthorne & Sheble Mfg. Co., which appeared in the first issue, Vol. 1, No. 1, of the Talking Machine World of January 15, 1905. In this advertisement there is shown one of the metal flower horns which we were then making according to the same method in which the firm of Hawthorne & Sheble had made horns composed of tapering strips joined together at their edges by lock seams prior to the year 1900 and which we continued to make after the date of said advertisement and after the date of the said visit of William H. Locke, Jr. I have never known of any attempt to enforce the Nielsen patent No. 771,441, except by threat, from the time of the issue of the patent on October 4, 1904, until the trial of the suit of this complainant against the Sherman Clay Company, which I am informed took place in California in October, [63] 1912, notwithstanding the fact that manufacturers of horns in the eastern part of the United States had been making horns similar to our flower horn shown in said advertisement continuously from time of the grant of the said Nielsen patent on October 4, 1904, as they had been making horns in the same manner continuously for several years prior to the grant of the patent and prior to the year 1900.

I annex hereto four diagrams, of which diagram No. 1 shows the shape and length of the concert horn made, in 1896, of tapering strips of metal having their edges brazed together as above described; and diagram No. 2 shows the shape and length and the width at the flaring end of the horn made in 1898-1899, of tapering strips of metal having their edges joined together by the tinsmith's or lock seam for the Graphophone Grand talking machine, as above described; and diagram No. 3 shows a rectangular oblong piece of sheet metal cut diagonally so as to form, in an economical manner, two tapering strips of metal, which can be used in the manufacture of a horn by joining their edges together after inverting one of the two tapering strips and assembling it with other tapering strips in the manner shown in diagram No. 4, according to the method employed by said firm of Hawthorne and Sheble prior to the year 1900.

At the present time and for several years last past the demand for horns for phonographs such as the horns of the Nielsen patent in suit and other similar horns that are exposed to view has very greatly diminished by reason of the fact that talking machines are now, and have for [64] several years last past been, concealed in cabinets requiring the employment of an entirely different sound amplifier concealed within the cabinet.

ELLSWORTH A. HAWTHORNE.

Subscribed and sworn to before me this 3d day of June, 1913.

[Notary's Seal] CLAYTON A. BALDWIN,
Notary Public, County of Fairfield, State of Connecticut. [65]

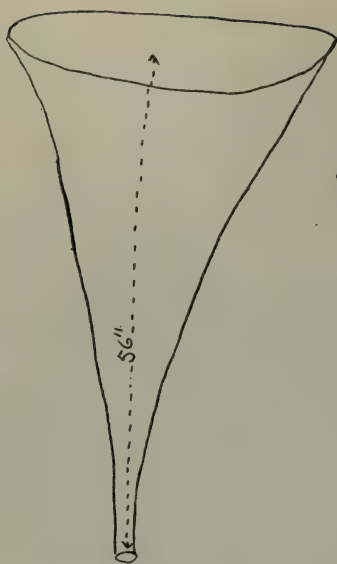


Diagram No. 1

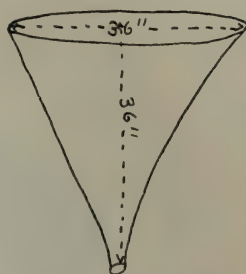


Diagram No. 2

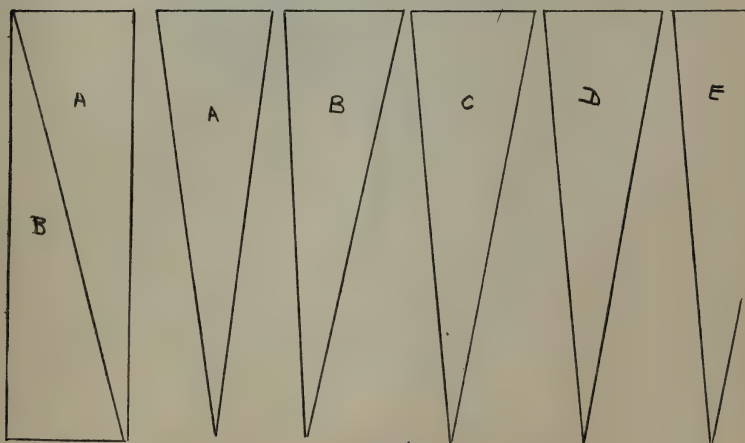


Diagram
No. 3

Diagram No. 4



101 Hawthorne and Shepley
Stated 1898-1899



EXHIBIT A.

GLASS HORNS.



For Graphophones and Phonographs

Decided Novelties, made on the latest approved accoustic lines. Present a very good appearance, take up but very little room and are made of heavy glass to insure safety in handling. Give a clear, bell-like tone in reproducing.

PRICES:

No. 1—	Clear Glass,	14 in. body,	9 in. bell,	\$3.00
No. 2—	"	14 in.	9 in.	scalloped,	3.25
No. 3—	"	19 in.	10 in.	"	3.75
No. 4—	Etched	14 in.	9 in.	"	3.75
No. 5—	"	19 in.	10 in.	"	4.25
No. 6—	Ruby	14 in.	9 in.	"	4.25
No. 7—	"	19 in.	10 in.	"	5.50

In Ordering mention Number.

HAWTHORNE & SHEBLE MFG. CO.

Incorporated

602-4-6 Chestnut St., Philadelphia.

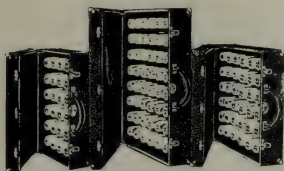
297 Broadway, New York.

*Exhibit
A
C. Hawthorne*

*Printed
in 1900*

We Manufacture Everything for Talking Machines.

Cylinder Record Carrying Cases.



We manufacture the best and most complete line. Our styles are up-to-date.

HORNS

We made the first Brass Horns used on Talking Machines, and now make over 100 different styles.

Our facilities are the largest.

Our Product the best.

Our Prices the most attractive.



HORN SUPPORTS.

We make many varieties and illustrate two of the most popular.

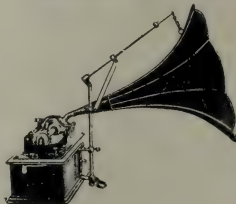


No. 19. Horn Stand. All sections heavy, strong, durable. Separable Top can be quickly adjusted. Handsomely Nickel Plated and Polished.

PATENTED.

No. 5. Horn Crane. Instantly adjusted to Home, Standard, or Triumph Phonograph cabinet. Used to support horns up to and including 36" long.

PATENT APPLIED FOR.



No. 88.

Disc Machine and Record Carrying Cases.

We manufacture a complete line for all style machines. Compact, Strong and Durable.

Our Patented Silk Finish Horns are now recognized as standard throughout the Talking Machine Trade.

Our Flower Horns are classed as the handsomest talking machine horns which have been placed on the market.



No. 91.

Remember. "We manufacture everything for Talking Machines," and we are the only parties in the U. S. making a complete line. If you are interested, a postal card will bring you our New Catalogue, No. 600, containing full information regarding supplies of every description.

HAWTHORNE & SHEBLE MFG. CO.

Mascher and Oxford Streets,

PHILADELPHIA, PA., U. S. A.

[Affidavit of John H. George.]

District Court of the United States, Northern District of California, Second Division.

SEARCHLIGHT HORN COMPANY,

Plaintiff,

vs.

PACIFIC PHONOGRAPH COMPANY,

Defendant.

SEARCHLIGHT HORN COMPANY,

Plaintiff,

vs.

BABSON BROS. INC.,

Defendant.

State of Connecticut,

County of Fairfield,—ss.

John H. George, being duly sworn, deposes and says:

I reside in the city of Bridgeport, Conn., and am employed by the Hawthorne Mfg. Co., Inc., of Bridgeport, Conn.

Prior to 1898 I resided in Philadelphia, Pa., and was employed by Messrs. Ellsworth A. Hawthorne and Horace Sheble, who carried on business under the firm name of Hawthorne and Sheble in that city. I continued with Hawthorne and Sheble until their business was incorporated in 1900 as the Hawthorne & Sheble Manufacturing Company and thereafter I continued my same employment with that corporation. When Mr. Hawthorne founded the Hawthorne Manufacturing Company, aforesaid, I came

to Bridgeport and entered [70] its employ where I have remained ever since. I have thus been continuously employed with Mr. Hawthorne for more than fifteen years, and during all that time we have been manufacturing various articles of sheet metal, including horns for use with talking machines.

I have read the annexed affidavit signed and verified by Mr. Ellsworth A. Hawthorne; and the statements therein set forth are, to the best of my knowledge, information and belief, correct. I know that prior to the year 1900 said firm of Hawthorne and Sheble manufactured and sold at Philadelphia, Pa., as a regular product, many metal horns composed of tapering strips of metal, extending from one end of the horn to the other and joined together at their edges by the ordinary tinsmith's or lock seam, forming, on the outside of the horn, longitudinal ribs extending from one end of the horn to the other. I personally assisted in the making of such horns before the year 1900 as well as after the year 1900. Specimens of such sectional metal horns made before the year 1900 are in existence at the present time.

When the horns were small, only two tapering strips of metal were used in making the horn, but when the horns were larger, having lengths of thirty-six inches, forty-eight inches, fifty-six inches or greater lengths, four or more tapering strips of metal were employed, prior to the year 1900, to build up the horns.

I recollect that prior to the year 1900 Hawthorne and Sheble made the concert horns fifty-six inches long; made the horns for the Graphophone Grand

talking machines thirty-six inches long; made the large horns or megaphones for the two United States battleships; made the horns composed of [71] five partial cones and similar to the one marked "Exhibit B—John H. George—Ellsworth A. Hawthorne"; and made other metal horns composed of tapering strips of metal, extending from one end of the horn to the other and joined together at their edges by lock seams forming longitudinal ribs on the outside of the horn, extending from one end of the horn to the other, said horns being narrow at the small end and flaring at the large end and being of bell shape, all in the manner, shape, form and number of tapering strips of metal described in the annexed affidavit of Mr. Ellsworth A. Hawthorne; and made horns of glass as described in Mr. Hawthorne's annexed affidavit.

JOHN H. GEORGE.

Subscribed and sworn to before me this 3 day of June, 1913.

[Notary's Seal] CLAYTON A. BALDWIN,
Notary Public, County of Fairfield, State of Connecticut. [72]

[Affidavit of Frank H. Stewart.]

District Court of the United States, Northern District of California, Second Division.

SEARCHLIGHT HORN COMPANY,

Plaintiff,

vs.

PACIFIC PHONOGRAPH COMPANY,

Defendant.

SEARCHLIGHT HORN COMPANY,

Plaintiff,

vs.

BABSON BROS., INC.,

Defendant,

State of Pennsylvania,

County of Philadelphia,—ss.

Frank H. Stewart, being duly sworn, deposes and says:

I am over twenty-one years of age and am engaged in business at No. 50 North Eighth Street, Philadelphia, Pa. On the Monday after Thanksgiving day in November, 1894, I became connected with the firm of Hawthorne & Sheble, whose place of business then was at 604 Chestnut Street, Philadelphia, where the Philadelphia business of John R. Harden, receiver of the North American Phonograph Company, had been carried on by his agent, Edward F. Leeds. From that time until 1908 I continued to be connected with the said firm of Hawthorne & Sheble and its successor, the Hawthorne & Sheble [73] Mfg. Co., which was incorporated in April, 1900, in Philadelphia, Pa., Springfield, Mass. and New York, N. Y., except that for the period of one year, about 1900, I was not connected with said firm or corporation.

To my knowledge the firm of Hawthorne & Sheble manufactured thousands of horns for phonographs at Philadelphia, Pa., prior to the year 1900 and beginning in the latter part of 1894 or the early part of 1895. I remember distinctly that from 1895 to 1899 said firm of Hawthorne & Sheble made and sold, in

Philadelphia, Pa., metal horns for phonographs, consisting of tapering metal extending from one end of the horn to the other and joined together at their edges by the well-known tinsmith's or lock seam forming longitudinal ribs on the outside of the horn, extending from one end of the horn to the other. When the said horns were small horns, say about twenty inches in length, two of such tapering strips were used to make the horn; but when the horns were larger, having lengths, for instance, of thirty-six, forty-eight or fifty-six inches or more, four or more of such tapering strips were used to make the horn. Such horns were narrow at the small end and flaring at the large end, being bell-shaped, the tapering strips curving outwardly and gradually from the small end to the flaring end of the horn. One reason for making the larger horns of several tapering strips of metal was that it was more economical to build up a horn of several tapering strips than it was to make the horn of a single piece of sheet metal or of two pieces of sheet metal, since a narrow rectangular oblong sheet of metal could be cut into suitable tapering strips for building up a horn without waste of the sheet metal. [74]

I recollect that in 1898-1899 Mr. Ellsworth A. Hawthorne of Hawthorne & Sheble purchased the first Graphophone Grand talking machine sold by the American Graphophone Company and that thereupon, at that time and before the year 1900, Hawthorne & Sheble manufactured horns for use with the said Graphophone Grand talking machine. These horns were thirty-six inches long and thirty-six in-

ches in diameter at the large or flaring end of the horn. The horns were bell-shaped, narrow at the small end and flaring at the large end and were composed of four or five tapering metal strips extending from one end of the horn to the other and joined together at their edges with the ordinary tinsmith's or lock seam, so as to form longitudinal ribs extending from one end of the horn to the other, the metal of the lock seams being so joined together that the ribs were formed on the outside of the horn and not on the inside thereof in the manner shown by two small horns, about twenty-one inches long in the possession of Mr. Louis Hicks, counsel for defendant herein, and exhibited to me, said two small horns being made up, however, of two tapering strips of metal joined together at their edges with such lock seams and being provided with a somewhat flaring large end composed of two tapering strips of metal joined together by such lock seams, said flaring end being joined to the other part of the horn by a similar lock seam extending around the circumference of the horn, about six inches of one of said small horns having been removed from the small end of the horn in order that it might be used, as I am informed, as a megaphone for making announcements at the beginning of the recording of the phonograph record.

At the time of the Spanish-American war in 1898 Hawthorne & Sheble made two large horns or megaphones for [75] two of the United States battleships, the Iowa and Oregon, according to my present recollection of the names of said battleships; these horns were about fourteen feet long. They were

built up of five or six tapering strips of metal extending from one end of the horn to the other and joined together at their edges by lock seams so as to form longitudinal ribs on the outside of the horn.

In 1896 Hawthorne & Sheble made concert horns about fifty-six inches in length and similar in shape to the above described horns for the Graphophone Grand talking machines. These concert horns were built up of four or five tapering strips of metal having their edges brazed together, the strips extending from one end of the horn to the other and the horn being narrow at the small end and flaring at the large end and of bell shape, the strips curving outwardly gradually from the small end to the flaring end of the horn. In 1898-1899, the firm of Hawthorne & Sheble also made horns composed of five tapering strips of metal joined together at their edges and extending from one end of the horn to the other, each of said strips being curved so as to form part of a cone and the five partial cones being joined together at their edges to form the said horn. In this case, the edges of the tapering strips were so joined together as to form longitudinal ribs on the inside of the horn. One of said horns has been submitted by Mr. Ellsworth A. Hawthorne to Mr. Louis Hicks for the purposes of this suit and is marked "Exhibit B—John H. George—Ellsworth A. Hawthorne," and on the piece of metal holding the ring for supporting the horn appear the initials "H. S.," the initials of Hawthorne and Sheble, the copartnership which became the Hawthorne & Sheble Mfg. Co. upon its incorporation in April, 1900. [76]

Hawthorne and Sheble made many such horns prior to the year 1900. In 1899-1900 Hawthorne and Sheble dealt in the well known Kaiser horn at the time when its originator and maker, Mr. John Kaiser, was a member of the firm of Harms, Kaiser & Hagen doing business in the city of New York. These Kaiser horns were made of tapering strips of tough leather-like paper overlapping and joined together at their edges by a glue, making longitudinal ribs extending from one end of the horn to the other. These Kaiser horns differed from the metal horns made by Hawthorne and Sheble prior to the year 1900 only in that Hawthorne and Sheble made their horns of tapering strips of metal while Mr. John Kaiser made his horn of tough leather-like material, and in that Hawthorne & Sheble joined the tapering strips of metal together by the ordinary tinsmith's or lock seam, while Kaiser joined his tapering strips of tough leather-like material together by means of glue, the different means of joining the tapering strips differing because of the difference in the material employed for building up the horns, the said methods of joining such strips of such material being well known in the art of making horns for phonographs and other horns for many years prior to the year 1900.

My attention has been called to page 70 of a book entitled "A Complete Manual of the Edison Phonograph," by George E. Tewksbury, published at Newark, New Jersey, in 1897, which sets forth an illustration of phonograph horns, among which are to be seen pyramidal horns having four tapering

sides forming four longitudinal ribs or edges where the four tapering sides come together, and showing also, what appears to be a Kaiser horn, and showing also, at the top of the illustration, a large horn of which the flaring end is [77] made of at least three tapering strips of metal joined together at their edges by lock seams, the remaining part of the horn being composed, apparently, of single strips of metal joined together at their edges. The common use of the lock seam in the year 1897 and prior thereto in the making of horns for phonographs is apparent from this illustration.

I have had a wide experience with horns for phonographs and my conclusion is that it is immaterial, so far as the sound producing qualities of the horn are concerned, whether the horn is provided with one or two or more longitudinal ribs or seams or whether the seam is on the outside or on the inside.

For several years last past horns for phonographs, such as the horns of the Nielsen patent in suit and the horns that were in use prior to the year 1903, as well as prior to 1900, have been going out of use very rapidly for the reason that for several years last past most of the phonographs made and sold are concealed in cabinets and employ very different sound amplifiers, which are concealed with the phonograph within the cabinet. Reference to the catalogues of the well-known manufacturers of talking machines will show this to be a fact.

FRANK H. STEWART.

Subscribed and sworn to before me this 4 day of June, 1913.

[Notary's Seal] GROVER C. LADNER,
Notary Public, County of Philadelphia, State of
Pennsylvania.

Commission expires Mar. 25, 1917. [78]

[Affidavit of John Kaiser.]

*District Court of the United States, Northern Dis-
trict of California, Second Division.*

SEARCHLIGHT HORN COMPANY,
Plaintiff,

vs.

PACIFIC PHONOGRAPH COMPANY,
Defendant.

SEARCHLIGHT HORN COMPANY,
Plaintiff,

vs.

BABSON BROS. INC.,
Defendant.

State of New York,
County of New York,—ss.

John Kaiser, being duly sworn, deposes and says: I am over the age of twenty-one years and reside at 101 East Tremont Avenue, in the city of New York. I have been in the phonograph and talking machine business ever since the year 1891. I began with the New York Phonograph Company in 1891 at 257 Fifth Avenue, New York City, and continued with that company until its business was

taken over by the North American Phonograph Company in 1893, whereupon I continued with the North American Phonograph Company until that company went into the hands of a receiver, John R. Harden, in May, 1894. I then engaged in giving exhibitions of the phonograph in New York State until the fall of 1894, [79] when I entered the employ of the firm of Walcutt, Miller & Co., doing business 110 East 14th Street, New York City. I left Walcutt, Miller & Co. about the year 1896 and then became connected with the Phonograph Record and Supply Company in Reade Street and continued with that company until 1897, Messrs. Walter H. Miller and Henry J. Hagen, who had formerly been members of the firm of Walcutt, Miller & Co., being members of the Phonograph Record and Supply Co. In 1897 I became connected with the Judge Publishing Company at 110 Fifth Avenue, New York City, and continued with that company until January, 1899, when I became a member of the firm of Harms, Kaiser & Hagen, which was formed in the latter part of 1898, and continued with that firm until July, 1900, whereupon I went into business on my own account for one year until July, 1901. I then became connected with the Universal Talking Machine Company of New York City, and continued with that company until 1904, when I became connected with the Douglas Phonograph Company at 89 Chambers Street, New York City; and I have continued in the Phonograph and talking machine business ever since. From 1891 down to the present time I have

paid particular attention to the recording and reproducing of sound by means of phonographs and other talking machines and to horns for phonographs and similar machines. All of the concerns which I was connected with, as above stated, were engaged in the talking machine business.

In October or November, 1895, I made the first "Kaiser Horn." I gave the first exhibition of the Kaiser horn in St. George's Parish House in Sixteenth Street, New York City, during Thanksgiving week in November, 1895. The Kaiser horn met with much success, and I received many compliments on account of it. Thereupon, while I was still [80] with Walcutt, Miller & Co., I presented a Kaiser horn to Mr. Walter Miller and another to Mr. Henry J. Hagen, members of the firm of Walcutt, Miller & Co. Mr. Miller told me at that time that he had exhibited the horn to Mr. Thomas A. Edison, who, according to Mr. Miller's statements, expressed himself as being well pleased with the horn.

The Kaiser horn referred to was made of twelve tapering strips of tough leather-like paper, which overlapped and were glued together at their edges forming longitudinal seams or ribs extending from one end of the horn to the other and strengthening and reinforcing the horn.

On April 14, 1898, I filed an application for the registration of a trademark, to wit "Kaiser Horn", in connection with an illustration of the horn, and set forth that this trademark had been continuously used in my business since September 1, 1897, which

statement was correct. Upon this application trademark No. 31,772, registered July 5, 1898, was issued to me, and I annex to this affidavit a copy of the said trademark. I have preserved the Kaiser horn from which the drawing of the horn shown in said trademark No. 31,772 was made; and I have submitted this horn to Mr. Louis Hicks, counsel for defendant herein, and I annex hereto a photograph of said horn designated "Kaiser Horn of 1898." It will be seen from an inspection of the horn itself and of the photograph thereof that the horn was made in the manner above described. It will be noticed also that the said horn, the photograph thereof and the drawing thereof in said trademark all show that the Kaiser horn was narrow at the small end and flaring at the large end and [81] bell-shaped, the tapering strips of which the horn was made curving gradually outwardly from the small end to the large end of the horn. I am familiar with the Nielsen patent No. 771,441 of October 4, 1904, and the drawings thereof. I can see no difference between the horn shown and described in the Nielsen patent and my Kaiser horn made as stated above in October or November, 1895. The Nielsen horn and the Kaiser horn are each made of tapering strips secured together at their edges so as to form seams or ribs extending longitudinally along the horn from one end of the horn to the other. in each case the ribs serve to strengthen and reinforce the horn. I preferred to make the Kaiser horn of a tough leather-like material, because, in my opinion, such material gave a better reproduction

of sound. Metal has a vibration that is sympathetic with certain musical notes, and this sympathetic vibration of the metal gives a blasting of the high notes. I therefore made the Kaiser horn of tough leather-like paper since such material and material such as wood give to the reproduction of sound a mellow musical quality and are particularly good in reproducing the detail of a phonograph record. The shape of the Nielsen horn is a copy of the shape of the Kaiser horn. Since I employed paper instead of metal it was advantageous to secure together the edges of the tapering strips by means of some adhesive substance such as glue. Had I employed tapering metal strips to make the Kaiser horn I should have employed one of the well-known tinsmith's seams such, for instance, as the lock seam then in common use in the construction of phonograph horns, for joining together the edges of the tapering metal strips. In 1895 and for several years prior thereto, and prior to the year 1903, it was common to make horns for phonographs of different materials such as metal, wood, celluloid, paper, glass, etc. [82] The bell-shaped horn was well known, and so was the construction of the bell-shaped horn from tapering strips joined together at their edges so as to form longitudinal ribs or seams extending from one end of the horn to the other, said tapering strips curving outwardly from the small end to the large end of the horn. The method of joining the edges of the tapering strips together necessarily depended more or less upon the material of which the tapering strips consisted. It

was common practice for many years prior to 1903, in this country, to substitute one material for another in the making of horns for phonographs and similar instruments and to join the edges of the strips of material forming the horn in any of the many well-known ways for so doing, all of which ways were equivalent to one another. If the strips of which the horn was composed consisted of wood, paper or celluloid an adhesive substance might be used which substance was in no way different from the solder employed when the strips were of metal. An examination of the French, English and United States patents adduced by defendant's counsel in this suit and shown to me by him will illustrate what I mean without the necessity of my referring with any particularity to any one or more of the patents. I did not apply for a patent on the Kaiser horn, and sought protection therefor by registration of my trademark only, because I was advised by my attorney at the time that, in view of the state of the art, it was not patentable invention to construct a horn of tapering strips secured together at their edges in the manner described, so as to form longitudinal seams or ribs reinforcing and strengthening the horn, the said strips curving gradually outwardly from the small end to the large end of the horn so that the horn was narrower at the small end and flaring at the large end and of bell shape, [83] the horn being made of a tough leather-like paper instead of the usual metal employed in order to improve the sound-producing qualities of the horn.

As appears from the statement in my said trademark, I put the Kaiser horn upon the market in 1897, as early as September 1, 1897, in connection with said trademark. I manufactured the Kaiser horns and sold them through the Judge Publishing Company, and later I sold them through the firm of Harms, Kaiser & Hagen and thereafter. The Kaiser horn was very popular, and I sold all that I could make. About the year 1901 E. A. Schoettel put upon the market an imitation of the Kaiser horn. It was called the "Mega" horn. I annex hereto a copy of Schoettel's advertisement of the Mega horn, which appeared on March 15, 1905, in Vol. 1, No. 3 of the Talking Machine World. Schoettel described and claimed a process for manufacturing this horn upon an application filed February 18, 1904, which resulted in patent No. 769,410 issued September 6, 1904. Mr. Louis Hicks, counsel for defendant herein, has exhibited to me a horn which is of precisely the same construction as the Kaiser horn and which he informs me was sent to him by Mr. Walter H. Miller. I cannot state whether this horn is a Kaiser horn or one of Schoettel's horns. I know that on the inside of this horn, on the flaring end thereof, appear the words "Patent Improvement Pending," and these words lead me to believe that it is a horn that was put out by Schoettel. I annex hereto a photograph of said horn designated as "Schoettel's Mega Horn or Kaiser Horn." I made the Kaiser horn in the manner shown in the Schoettel patent No. 769,410 but long prior to Schoettel. Everyone familiar with the phonograph trade in the

United States prior to 1900 knows the Kaiser horn.
[84]

My attention has been directed by defendant's counsel, Mr. Hicks, to patent No. 534,543, granted February 19, 1895, to Emile Berliner. Referring to fig. 3 of that patent, it will be seen that the drawing shows a bell-shaped horn for a phonograph of substantially the same shape as my Kaiser horn. At the flaring end of the horn are longitudinal ribs upon the outside of the horn, so that the horn shown by Berliner is substantially the same as the horns shown in the Edison catalogue referred to in the moving papers upon this motion, in that all the horns are bell shape and are provided with longitudinal ribs at the flaring end of the horn, such ribs being absent from the other end of the horn for a considerable part of the length of the entire horn, except that in the Edison horns there is a single seam to join together the edges of the metal strip of which said end of the Edison horns is made. I have seen the Berliner horns shown in fig. 3 of Berliner patent No. 534,543. They were made of the composition used for making flat disk records. For this reason there were no edges to be joined together in the construction of the horn as would have been the case had the horn been made of tapering strips of paper, as with the Kaiser horn, or of metal.

I have stated above that it has been common to make horns for phonographs and similar machines out of wood and celluloid and other like material. This statement is corroborated by the United States, French and English patents adduced by defendant's

counsel. Reference to French patent No. 318,742 of February 17, 1902, discloses in figs. 8 and 14, for example, horns made of tapering strips secured together at their edges in a manner to form longitudinal ribs either on the outside or on the inside of the horn. Eight tapering strips are shown in fig. 8, [85] and the patent describes a horn made of twelve such strips. In fig. 8 the horn is shown as an octagonal pyramid, while in fig. 14 it is bell-shaped. The French patent states that wood is substituted for metal, just as I substituted tough paper for metal when I made the Kaiser horn in 1895. I see no difference between the metal horn of the Nielsen patent in suit and the wooden horn of the said French patent to Turpin. Horns of wood have continuously been used in this country and are in use to-day. I have in my possession a wooden horn which I purchased about the year 1907. It is called the "Eureka" phonograph horn and bears upon the outside of one of the tapering wooden strips of which it is made the name "General Phonograph Supply Company" with the registered trademark of that company and "Patent No. 829,066" with other words. This wooden horn is one of excellent sound-producing quality. I purchased it from a dealer in Warren Street, New York City, probably the General Phonograph Supply Company. It was made by Edward B. Jordan Company Cabinet Works, 129 Degraw Street, Brooklyn, N. Y. The horn was sold to the public at the time I made the purchase for fifteen dollars (\$15.00). The horn was made by the Jordan Company exclusively for the dealer in Warren Street

from whom I purchased the one produced by me. It is a first-class horn, particularly good in rendering the detail of the phonograph record and the reproduction of sound is of a mellow, musical quality. The lines of the horn are good, being like the lines of the Kaiser horn and of the bell-shaped horn of the French patent to Turpin. The horn is composed of tapering strips of wood extending from one end of the horn to the other, joined together at their edges by means of longitudinal ribs of wood extending from one end of the horn to the other, said longitudinal ribs being provided [86] with recesses or grooves upon each side to receive the adjacent edges of the tapering strips, in precisely the manner employed in joining together the tapering strips of paper, celluloid or other like material when metal strips or clips have been employed for that purpose as shown by many patents of the prior art, for example, fig. 5 of British patent No. 22,612 of 1899 to Hogan, figs. 5 and 6 of British patent No. 7,594, of 1900 to Hogan, fig. 2 of British patent No. 9,727 of 1901 to Runge, figs. 3 and 4 of British patent No. 22,273 of 1901 to Runge, fig. 7 of British patent No. 17,786 of 1902 to Fairbrother, figs. 2, 3 and 5 of French patent No. 331,566 of April 28, 1903 to Hollingsworth, fig. 2 of French patent No. 321,507 of May 28, 1902, to Runge. The tapering strips composing this "Eureka" wooden horn curve gradually outwardly from the small end to the large end of the horn so that the horn is flaring at its large end and of a bell shape. The inside of the horn is handsomely finished by what is called marquetry finish. I annex

hereto a photograph of the said Eureka horn.

Reference to United States patent No. 453,798 of June 9, 1891, and No. 491,421 of February 7, 1893, to A. Gersdorff will show that the making of a funnel or horn of tapering strips of metal joined together at their edges by the well-known tinsmith's or lock seam, the tapering strips extending from one end of the horn to the other and gradually curving outwardly so as to make the funnel or horn flaring at its large end and of bell shape was well-known. In the Gersdorff patent No. 491,421, the construction [87] of the horn or funnel is described at page 1, lines 79-87, as follows:

"The sections are united together along their side edges through the body of the funnel by bending the same to form flanges and by interlocking and soldering the flanges together, thus forming the longitudinal seams; but in the nozzle the sections are united by soldering instead of interlocking the flanges, thus forming smooth seams in the nozzle."

Gersdorff further describes the construction of his funnel or horn as follows (p. 1, lines 36-49):—

"My funnel A is formed from two or more—preferably three—sections *a* and *a* which are united upon longitudinal lines so that each section extends from the upper end to the lower end of the funnel and constitutes a part of the body and a part of the nozzle of the same, as shown. The joints or seams are all lengthwise of the funnel, and in the direction of the greatest strain—transversely—said funnel presents only

solid metal which is strengthened by its curve form and by said seams, and is capable of resisting successfully a much greater force than would ever be exerted by any proper use."

In his claims Gersdorff specifies "as a new article of manufacture, a funnel made of longitudinal sections united together by longitudinal seams."

These patents to Gersdorff in themselves show that the horn of the Nielsen patent in suit was entirely lacking in novelty, since Nielsen did nothing more than to construct the Gersdorff funnel or horn. The theory that the ribs formed by the longitudinal seams of a horn, such as the seams of the Gersdorff funnel or horn, would improve the sound-producing qualities of the horn was known in the phonograph art long prior to the date of the alleged invention of the horn of the Nielsen patent in suit. This clearly appears from British patent No. 22,612 of 1899 to Hogan (p. 2, lines 20-23), where it is stated that the metal strip *h* of fig. 5 not only serves as a means of joining the edges of the sheet material together, but "also serves to augment and improve [88] the sounding qualities of the trumpet"; and in French patent No. 321,507 of May 28, 1902, to Runge, which shows a similar metal clip or strip (see *G'* of figs. 1 and 2), and states that a second reinforcement, instead of being in the form of a crease, can assume the form of a metal clip or strip fixed upon the exterior or the interior of the horn and that more than two reinforcements can be employed (p. 1, line 62 to p. 2, line 2). This means that several longitudinal ribs, such as *G'*, can be employed to secure together the

edges of tapering strips and thereby reinforce the horn as well as to improve the sound-giving qualities of the horn as clearly set forth in claim 1 of this French patent which, translated, reads as follows:

“1. In a graphophone or talking machine, a horn having two or more longitudinal reinforcements serving to improve its sound-producing qualities.”

Belgian patent No. 163,518 of May 27, 1902, to Runge also sets forth that the horn therein described has two or more longitudinal reinforcements to improve its sonorous qualities. In other words, it was known prior to the date of the alleged invention of the horn of the Nielsen patent in suit that if the funnel or horn of the Gersdorff patents was used in the reproducing of sound by means of a phonograph the longitudinal ribs or seams of the Gersdorff funnel or horn would improve the sound-giving qualities thereof.

About three years ago William H. Locke, Jr., called upon me in the city of New York and asked my opinion as to whether there was any difference in the sound-producing qualities of the Nielsen horn of the patent in suit and the well-known black and gold horn which is provided with only [89] one longitudinal rib. In other words, he asked me whether there was any difference in the sound-producing qualities of the two horns shown in the advertisement of Hawthorne & Sheble Mfg. Co., appearing in Vol. 1, No. 1 of the Talking Machine World for January 18, 1909, a copy of which I am informed is annexed to the affidavit of Mr. Ellsworth A. Hawthorne in this suit,

the upper horn being the black and gold horn and the lower horn being a horn of the Hawthorne & Sheble Mfg. Co., similar to the Nielsen horn of the patent in suit. The William H. Locke, Jr., referred to is the William H. Locke, Jr., of the Searchlight Horn Company, the plaintiff in this suit. I could see no difference between the sound-producing qualities of the two horns; and it is my opinion, based upon my long experience in this art, that it is immaterial whether a horn be provided with one or two or more longitudinal ribs and whether the ribs be on the inside or on the outside or upon the inside and upon the outside of the horn, so far as the sound-producing qualities of the horn are concerned.

The manufacture of horns for phonographs in this country from tapering strips of metal joined together at their edges by the ordinary tinsmith's or lock seam forming longitudinal ribs upon the outside of the horn is as old as the phonograph art itself. Defendant's counsel, Mr. Hicks, has exhibited to me two metal horns, one of which is about twenty-one inches long and the other of which is similar, except that about six inches has been cut off at the smaller end to adapt it, as I am informed, for use as a megaphone in making announcements at the commencement of the recording of a sound record. These two horns are made up of two tapering strips of metal united at their edges [90] by the usual lock seam forming longitudinal ribs upon the outside of the horn. These two horns are provided with flaring portions at the large end of the horn and are also made of two tapering strips joined together at their edges by lock seams

forming longitudinal ribs upon the outside of the large end of the horn. The flaring portions are joined to the other portions of the horns by similar lock seams forming ribs extending around the circumference of the horn, where the handles of the horns are. Such horns were used for reproducing sound from phonographs prior to the year 1895. Photographs of these horns are annexed to the affidavit of Walter H. Miller on behalf of defendant herein. Reference to a book entitled "A Complete Manual of the Edison Phonograph," by George E. Tewksbury, published at Newark, New Jersey, in 1897, will show, on page 70 thereof, an illustration of a number of phonograph horns of different shapes, in which the lock seam was employed to join together the adjacent edges of the tapering strips of which the horns of metal were made. In the center of the illustration, however, appears one of my Kaiser horns. Some of the horns shown were made up of four tapering strips, each tapering strip forming the side of a pyramid so that the horn was provided with four longitudinal ribs. The flaring large end of the large horn at the top of the illustration was composed of at least three tapering strips joined together at their edges by lock seams. The small metal horns of the illustration were, apparently, metal horns composed of two tapering strips joined together at their edges by lock seams to form the flaring end of the horn and of two tapering strips similarly joined to form the other end of the horn, in the manner above described.

Metal horns for phonographs have been manufactured [91] for many years, from a period long

prior to 1900, by manufacturers of sheet metal goods, so that the knowledge of the art of making goods from sheet metal has always been a part of the knowledge of the art of making horns for phonographs. I recollect that while I was with the Universal Talking Machine Company a number of cornice makers, during a strike on their part, turned their attention to making horns for phonographs. Several of the well-known manufacturers of sheet metal goods in the east have manufactured metal horns for phonographs.

JOHN KAISER.

Subscribed and sworn to before me this 6th day of June, 1913.

[Seal]

JOHN J. V. BURKE,

Notary Public, New York County. No. 344

[92]

TRADE-MARK.

No. 31,772.

Registered July 5, 1898.

JOHN KAISER.

HORNS USED IN CONNECTION WITH SOUND PRODUCING DEVICES.

(Application filed Apr. 14, 1898.)

The "Kaiser Horn"



Witnesses
Edward A. ...
M. F. Keating

John Kaiser
 By his Attorney
Charles J. Kintner

UNITED STATES PATENT OFFICE.

JOHN KAISER, OF NEW YORK, N. Y.

TRADE-MARK FOR HORNS USED IN CONNECTION WITH SOUND-PRODUCING DEVICES.

STATEMENT and DECLARATION of Trade-Mark No. 31,772, registered July 5, 1898.

Application filed April 14, 1898.

STATEMENT.

To all whom it may concern:

Be it known that I, JOHN KAISER, a citizen of the United States, residing at New York, in the county of New York and State of New York, and doing business at No. 110 Fifth avenue, in said city, have adopted for my use a Trade-Mark for Phonograph, Graphophone, or Gramophone Horns, of which the following is a full, clear, and exact specification.

My trade-mark consists of the words "The Kaiser Horn," arranged above a phonograph, graphophone, or gramophone horn suspended from a tripod-support. These have generally been arranged as shown in the accompanying facsimile, which represents a phonograph, graphophone, or gramophone horn yieldingly suspended from a stand. Above the horn appear the words "The Kaiser Horn" in ornamental letters; but the style of lettering is unimportant, the essential feature of my trade-mark being the words "THE KAISER HORN," arranged above a phonograph, graphophone, or graphophone horn suspended from

a tripod-support, substantially as shown in the accompanying facsimile.

This trade-mark I have used continuously in my business since September 1, 1897.

The class of merchandise to which this trade-mark is appropriated is phonograph, graphophone, gramophone, or sound-reproducing devices, and the particular description of goods comprised in said class upon which I use it is the horn or horns utilized in connection with such instruments for magnifying or intensifying the sounds as reproduced.

It has been my practice to apply my trade-mark by printing the same upon suitable labels, generally in black colors, inclosing one of such labels with each horn and its supporting-stand for shipment. I have also used it in catalogues describing the goods and upon letter-heads.

JOHN KAISER.

Witnesses:

C. J. KINTNER,
M. F. KEATING.

DECLARATION.

State of New York, county of New York, ss.

JOHN KAISER, being duly sworn, deposes and says that he is the applicant named in the foregoing statement; that he verily believes that the foregoing statement is true; that he has at this time a right to the use of the trade-mark therein described; that no other person, firm, or corporation has the right to such use, either in the identical form or in any such near resemblance thereto as might be calculated to deceive; that it is used by him in commerce between the United States and

foreign nations or Indian tribes, and particularly with Canada and Great Britain; and that the description and facsimiles presented for record truly represent the trade-mark sought to be registered.

JOHN KAISER.

Sworn and subscribed to before me this 13th day of April, 1898.

[L. S.] CHARLES J. KINTNER,
Notary Public, N. Y. Co., New York.



Kaiser Horn 1898

THE TALKING MACHINE WORLD.

9

WILL REPLACE CHEAP PIANO.

This is the Mission of the Talking Machine—Its Wonderful Progress and Possibilities.

By A. HANLEY JONES, LONDON, ENGL.

Is the talking machine, as a whole day wonder, or is it that a permanent place as a means of providing music in houses where music of any other kind is impossible? The question is one which is frequently asked, not only by members of the public, but even—perhaps it would be true to say especially—by those engaged in the talking machine trade. The answers given by different people vary considerably, and although probably the general opinion is that the talking machine has come to stay, there are not wanting those who believe that, in a few years' time, its popularity will, practically speaking, be a thing of the past.

There can be little doubt that, rapid as has been the progress of the graphophone during the past few years, we are on the eve of still greater developments in the near future. It is not to be expected that we are yet anywhere near perfection in the recording and reproduction of sounds; in all probability the next few years will see as great an advance as has been achieved during the past decade. The graphophone of to-day, far ahead as it is of earlier crude efforts, is probably just as far behind the machines which will be selling ten or fifteen years hence. One of the main obstacles to the introduction of the graphophone into many homes is, no doubt, the popular impression that the talking machine is still only a scientific toy, and that anything to which the generic name of "phonograph" can be applied is something capable of emitting only weird screeches and scratchings without the slightest pretensions to musical quality of tone. People who hold this idea are familiar to everyone engaged in the talking machine trade, and if there is one thing more annoying than their ignorance it is their wonder and astonishment when they hear for the first time a really up-to-date graphophone. The work of converting this large section of the community is progressing, but much yet remains to be done.

I believe that in the near future the graphophone is destined to replace, to a very great extent, the cheap piano which is to-day so common a feature in the homes of the lower middle and upper working classes. Anyone engaged in selling talking machines on installment terms is aware that one of the commonest (and best) guarantees of the bona fides of a would-be purchaser is the production of a list of receipts from some other house dealing on installment terms. A frequent purchase in this manner is a piano running to £15 or so, which, probably, is incapable of affording anything approaching music and will never be played on by any single member of the family to which it belongs.

In view of the possibilities latent in the graphophone, I do not believe this kind of thing is likely to go on. The music to be obtained from the graphophone is better than could be obtained from a piano of the type I have just mentioned, even if there were anyone in the house who could play it, and the selection of available music is, of course, infinitely greater. Even the addition to the fifteen guinea piano of one of the numerous types of automatic player will not give the variety of results to be obtained from a high class graphophone. In the absence of the automatic player, to attain even very moderate proficiency demands an amount of time and hard work which can only be rarely devoted to the study of music by those who have to work hard for their daily bread.

In the vast bulk of middle class homes, moreover, the gift of musical executive ability is either absent or circumstances render it certain that it can never be developed. The graphophone, on the other hand, affords to such houses a steady, an inexhaustible supply of music of any kind without the necessity of constant study or practice. It is not to be supposed that this point will be overlooked, and it is beyond question one which will have a potent influence on the future of the talking machine—Columbia Record.

BUSY TIMES IN PHILADELPHIA.

Victor Co. to Remove Their Offices to Camden—Many New Records Now Under Way—Some Distinguished Owners of Victor Machines.

(Special to The Talking Machine World.)

Philadelphia, Pa., March 12, 1905.

The Victor Talking Machine Co. have their plant in Camden running as good as before the fire. They are able to do more work now than ever before, as they have installed ten additional presses. They are a little lack in their orders, but expect, by the end of this month, to be in excellent shape. By the first of April, and thereafter, they will turn out more records than they have ever done before. The business of the firm has been growing with great rapidity, and it will facilitate matters very much when they will be ready to install their offices in connection with the factory in Camden, removing from the Commonwealth Trust building, this city. This move will be made the last Saturday in April, and the firm will be ready to do business in Camden on the 1st day of May.

Eldridge R. Johnson, president of the Victor Co., is at present in St. Augustine, Fla., as well as A. C. Middleton, secretary of the company. Mr. Johnson has been down for some weeks, but Mr. Middleton only joined him last week. They will both remain for five or six weeks.

The firm are branching out considerably. They are establishing new agencies all the time. One of their most recent is the firm of W. H. & C. Wolf, of Altoona, Pa., who have been ordering heavily.

When the firm move their offices to Camden they will also remove their laboratory at present located at 124 South 10th street. This is where their record laboratory is located.

They have been getting out new records rapidly. Among these new ones are a number representing Arthur Pryor's Orchestra in classic selections. It may interest owners of Victors to know that the following rulers possess Victor talking machines and a collection of records: Queen Alexandra of England, King Carlos of Portugal, King Alfonso of Spain, King George of Greece, Pope Pius X., the Sultan of Turkey and President Diaz of Mexico. For the last named ruler the firm have just completed the finest machine ever built, and President Diaz appreciates it is shown by an autograph letter which the firm have received.

Among the recent great singers who have sung to the Victor machine are the following: M. Plo Planchon, bass; Mrs. Louise Homer, contralto;

Nea, Antonio Scotti, baritone, M. Marcel Journet, bass, and M. Francisco Nullo, tenor.

THE TALKING MACHINE ALARM CLOCK.

Judging by the alerts with which the average possessor of a talking machine is willing to exhibit, and to the persistency with which he will operate the machine from early morning to late at night, it seems quite probable that the inventor of the graphophone alarm clock will have no difficulty in finding a ready market for his device among devotees of the talking machine. It is a comparatively easy matter to control a talking machine record by means of an alarm clock register, and to amplify the functions of the alarm to indicate the hours, thus obviating the striking clock or the use of a night lamp to indicate the time. There is something modern about being called by a voice in the morning instead of being aroused by the mechanical bell. Moreover the phonographic record that is set in motion can be arranged so that any number of alarms can be given at intervals.

COMBINATION TALKING MACHINE AND MUSIC BOX.

The Miraphone, which is a combination talking machine and music box is one of the novelties which is rapidly becoming popular. It combines the variety obtained from the talking machines with the musical tones of the music box, and appeals to the most varied tastes for music



and entertainment. Its fine mechanism is notable even with perfect regularity.

To use the Miraphone as a talking machine only requires the removal of the steel tune sheet, adjusting turn-table, on revolving cone, and setting up the metal arm supporting the horn and soundbox. The cabinet is of oak, for mahogany and highly polished. Talking machine dealers will find it is a valuable acquisition to their stock. The Miraphone is manufactured by the Jacet Music Box Co., 39 Union Square, New York.

THE HORN THAT PROVES ITS WORTH

THE "MEGA"

"MEGA" TRUMPET

IT'S PAPER

THE IDEAL HORN for the true and to love and for the discerning purchaser.

HIGH GRADE, DISTINCTIVE PRODUCT

Build on correct acoustic principles and possessing a true, lasting, not found in other horns.

PURE, SWEET, SATISFYING

TRADE MARK

GRACEFUL IN SHAPE,

RICH IN COLORING,

SUBSTANTIAL, EASED GLASS FINISH.

GUARANTEED TO STAND IN ANY CLIMATE.

If you cannot obtain the "Mega" from your dealer, write us direct and forward your jobber's name.

DO THESE ADVANTAGES APPEAL TO YOU?

SAMPLE DISPLAY ROOM,
32 EAST 14th STREET
NEW YORK CITY

In charge of L. KAISER, Local Representative.

Prices on all "Mega" horns are restricted. The "Mega" does not tarnish, dent, or become obsolescent. There is no depreciation in value in carrying a stock of "Megs."

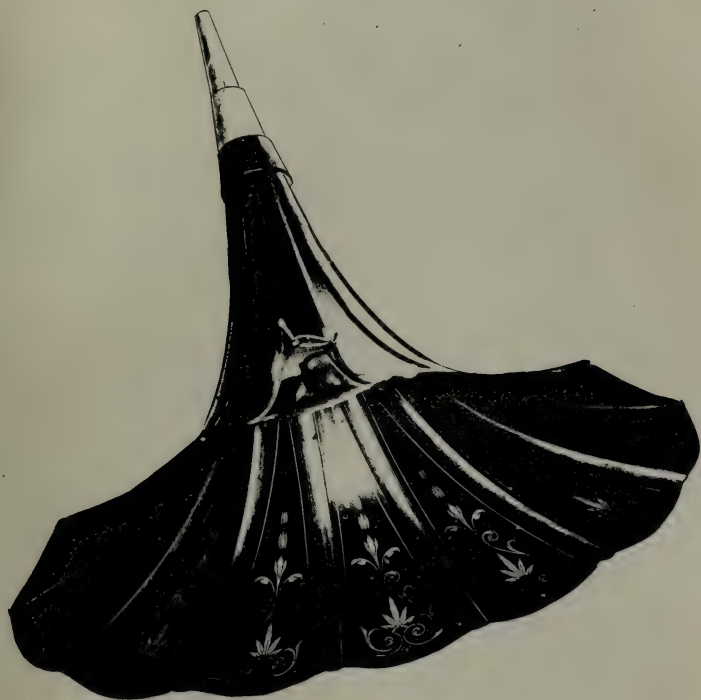


Makers. E. A. & A. G. SCHOETTEL
BROAD STREET, MASPETH, QUEENS CO., N. Y.

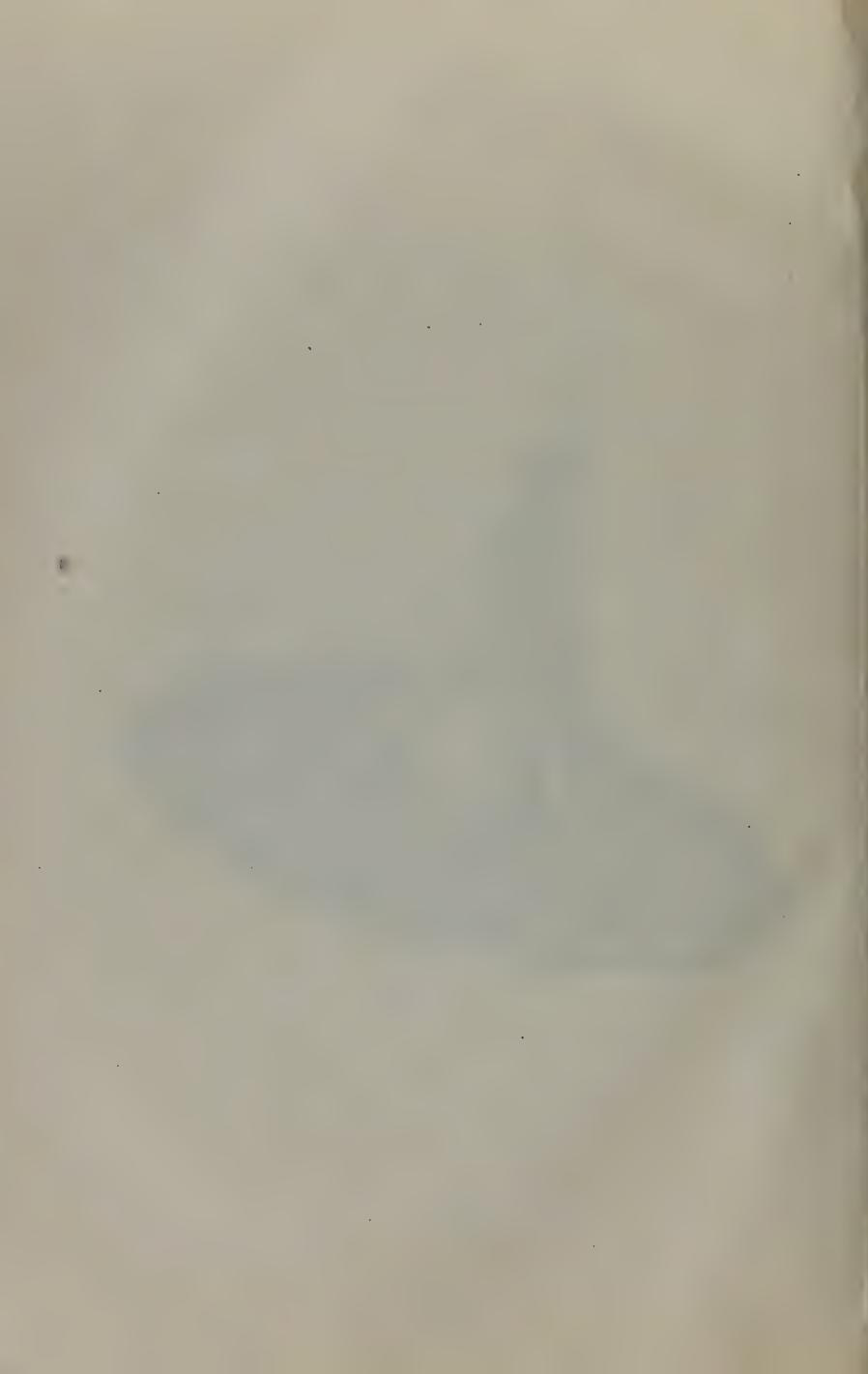




Schoettels Megahorn or Kaiser-Horn



EUREKA MARQUETRY-FINISH HORN.



[Affidavit of Walter H. Miller.]

District Court of the United States, Northern District of California, Second Division.

SEARCHLIGHT HORN COMPANY,
Plaintiff,

vs.

PACIFIC PHONOGRAPH COMPANY,
Defendant.

SEARCHLIGHT HORN COMPANY,
Plaintiff,

vs.

BABSON BROS., INC.,
Defendant.

State of New York,
County of New York,—ss.

Walter H. Miller, being duly sworn, deposes and says:

I am over the age of twenty-one years and reside at Orange, New Jersey. I have been engaged in the talking machine business continuously since the year 1888 when the North American Phonograph Company was organized. Beginning in 1888 I assisted Mr. Thomas A. Edison in recording and reproducing sound records by means of a phonograph. I did the same work for the North American Phonograph Company and continued with that company until it went into the hands of a receiver in the year 1894 when I became a member of the [99] firm of Walcutt, Miller & Company, which firm did business at 110 East 14 Street and then at 53 East 11 Street, in

the city of New York. The firm of Walcutt, Miller & Company was dissolved about the beginning of the year 1896. I then became connected with the Phonograph Record and Supply Company and continued with that company until I entered the employ of the National Phonograph Company in the latter part of 1896 or the early part of 1897, at West Orange, New Jersey. Since that time I have been connected with the recording department of the National Phonograph Company and its successor, Thomas A. Edison, Inc. At present I am the manager of the recording department of Thomas A. Edison, Inc. All of the companies and firms above mentioned, with which I have been connected, were engaged in the talking machine business.

When the National Phonograph Company began to make and sell sound records, which was in the latter part of 1896 or the early part of 1897, at West Orange, New Jersey, we employed for the making of announcements at the beginning of the recording of the phonograph record a brass horn, which had then been on the market for several years. The horn referred to was on the market in 1892 when I was employed by the North American Phonograph Company. I still have the horn employed by the National Phonograph Company for making announcements at the beginning of the recording of phonograph records in the latter part of 1896 or the early part of 1897. The horn was originally about twenty-one inches long. It was a horn adapted for use and was generally used in the reproduction of sound from a phonograph record by means of a phonograph; but

in order to use it as a megaphone for the making of the announcements aforesaid we cut off about six inches from the small end of the horn. I [100] have in my possession a like horn which shows exactly what the horn first mentioned was before we cut off six inches from the small end thereof. These two horns I have turned over to Mr. Hicks, counsel for defendants in these suits, and I hereto annex photographs of the two horns. Reference to the photographs and to the horns themselves shows that each horn was about twenty-one inches long, narrow at the small end and wide or flaring at the large end and of bell shape. Each horn consisted of two tapering strips of brass, joined together at their edges by the ordinary tinsmith's or lock seams forming two longitudinal ribs. In making the lock seams, the pressure was so applied that the seams were formed on the outside rather than upon the inside of the horn. The flaring end of the horn was also composed of two tapering strips of brass joined together at their edges by lock seams so as to form longitudinal ribs upon the outside thereof. The horn consisted of the two parts thus described, to wit, the flaring part of the horn and the remaining part of the horn; and the two parts were joined together by a similar lock seam which formed a rib extending around the circumference of the horn. The two parts of the horn were so joined together that the longitudinal ribs and the tapering strips of brass of the flaring part of the horn formed continuations of the longitudinal ribs and tapering strips of the other part of the horn. In other words, each of the said two horns may be de-

scribed as consisting of two tapering strips of brass, extending from one end of the horn to the other and joined together at their edges by lock seams forming longitudinal ribs on the outside of the horn, which extended from one end of the horn to the other. [101]

The horn which has been cut off at the small end has scratched upon it the initials "E. W. M.," which are the initials of Edward W. Meeker of Orange, New Jersey, who used this particular horn in 1897 for the making of the said announcements. The horn also has attached to it a tag bearing the words "Horn used in Edison Recording Dept. prior to the Spanish War. See Walter Miller," but this tag was not attached to the horn when the photograph thereof hereto annexed was taken. Before Edward W. Meeker used the horn for making announcements it was used for that purpose by one of the members of the band, principally, Louis Atz, employed by the National Phonograph Company, for the making of phonograph records. Edward W. Meeker was employed by the National Phonograph Company to make announcements about the spring of 1897, and thereupon and thereafter he employed the said horn for that purpose instead of Atz or any other member of the band. The making of these phonograph records was under my direction; and so was, therefore, the use of the said horn for the making of the announcements. I therefore know that the horn referred to was in existence and in use, as described, in the year 1897. I also know that such horns were on the market in the United States and were sold for use and

were used in reproducing sound from phonograph records as early as the year 1892, when I was with the North American Phonograph Company.

I have made a practical study of the construction and use of horns for phonographs ever since the year 1888. The talking machine art has used metal, wood, paper, glass, celluloid and other materials as desired for the construction of phonograph horns. The idea that stiffening of the horn, as by means of a longitudinal joint formed by joining together the edges of the sheet material of which the horn was made, [102] would improve the sound-producing qualities of the horn was an idea that is old in the art. It was set forth, for instance, in British patent No. 22,612 of 1889 to Hogan, at page 2, lines 20-22; in U. S. patent No. 632,015 of August 29, 1889, to Hogan, at page 1, lines 83-87; in French patent No. 321,507 of May 28, 1902, to Runge, at page 1, lines 1-4 and in claim 1; and in Belgian patent No. 163,518 of May 27, 1902, to Runge.

I was familiar with the well-known Kaiser horn prior to the year 1900. The Kaiser horn consisted of tapering strips or tough leather-like paper, secured together at their edges so as to form longitudinal ribs, the tapering strips of paper and longitudinal ribs extending from one end of the horn to the other, and strips curving outwardly gradually so as to make a horn narrow at the small end and flaring at the large end and of bell shape. Horns for phonographs have also been made of wood and other suitable material. French patent No. 318,742 of February 17, 1902, to Turpin shows, in fig. 8, a

horn composed of tapering strips of wood, secured together at their edges by longitudinal ribs of wood or metal, either on the inside or on the outside of the horn (See figs. 9, 10, 12 and 13) and shows, also, in fig. 14, that horns thus constructed may be of a bell shape, like the Kaiser horn, as well of octagonal shape as shown in fig. 8. The French patent to Turpin also sets forth, at p. 3, lines 83-103, that the horn may be made of twelve tapering strips, some of which may be of wood, some of metal and some of glass, which, of course, are to be joined together at their edges by the longitudinal ribs described in the French patent to Turpin, and which may be of bell shape as well as of the shape of a pyramid of twelve sides according to the teachings of the patent. Reference to the illustration on [103] page 70 of a book entitled "A Complete Manual of the Edison Phonograph," by George E. Tewksbury, published at Newark, New Jersey, in 1897, by the United States Phonograph Company, will show that when phonograph horns were made of metal some appropriate tinsmith's seam, such as the lock seam was used to join together the edges of the tapering strips of metal making up the horn. Makers of horns have employed appropriate means for joining together the edges of the parts composing the horns according to whether the horns were made of metal, wood, paper or other suitable sheet material. If metal was used solder might be employed; if wood was used longitudinal ribs of wood or metal and glue or other suitable adhesive material might be employed. The patents of the prior art adduced by Mr. Hicks, de-

fendant's counsel, show that all the well-known methods of joining together adjacent edges of tapering strips of sheet material were employed. British patent No. 22,612 of 1889 to Hogan shows, in fig. 5, that two strips of metal bent to receive the edges of the adjacent tapering strips and soldered together were employed. British patent No. 7,594 of 1900 to Hogan shows, in fig. 5, that a single strip of metal bent into the shape of a flattened letter S so as to form two receiving sockets may be employed and shows, in fig. 6, that a single strip of metal bent in a different manner so as to form two receiving sockets may be employed. British patent No. 9, 727 of 1901 to Runge shows, in fig. 2, the use of two strips of metal each bent in U shape and soldered together. British patent No. 22,773 of 1901 shows, in figs. 2 and 3, the like use of two U-shaped strips of metal soldered together. British patent No. 17,786 of 1902 to Fairbrother shows, in figs. 6 and 7, that a butt seam (fig. 6) and a lock seam (fig. 7) may be employed in joining together the [104] edges of tapering strips of sheet material such as celluloid, paper, or the like. British patent No. 20,567 of 1902 to Tourtel shows, in fig. 4 and page 3, lines 40-48, that in a horn for phonographs, made of any suitable material the edges of the tapering strips may be so bent and overlapped so as to form a longitudinal rib strengthening and reinforcing the horn.

The formation of longitudinal ribs in the joining together of tapering strips of suitable material employed in the making of a horn for phonographs, in order to strengthen and reinforce the horn and to im-

prove the sound-giving qualities thereof is also shown in the following patents:

French patent No. 318,742 of February 17, 1902, to Turpin, figs. 8, 9, 10, 12, 13 and 14.

French patent No. 321,507 of May 28, 1902, to Runge, figs. 1 and 2 and page 1, lines 1-4, and page 2, claim 1.

French patent No. 331,566 of April 28, 1903, to Hollingsworth, figs. 1-5, p. 1, line 60 to p. 2, line 13.

Belgian patent No. 163,518 of May 27, 1902, to Runge.

The same construction is shown in the following letters patent of the United States:

No. 491,421 of February 7, 1893, to Gersdorff, fig. 2; p. 1, lines 36-49 and lines 79-87; p. 2, claims 1 and 2.

No. 632,015 of August 29, 1899, to Hogan, fig. 5; p. 1, lines 82-87; claims 2 and 3.

No. 769,410, of September 6, 1904, to Schoettel, figs. 1-4; page 1, lines 32-39; claims 1-4. [105]

No. 647,147 of April 10, 1900, to Myers, fig. 4; p. 2, lines 46-75.

No. 748,969 of January 5, 1904, to Melville, fig. 1; p. 1, lines 36-56 and lines 91-98; claim 3.

The foregoing British, French, Belgian and United States patents specifically state and show that the longitudinal ribs formed by joining together the edges of the tapering strips of suitable material composing the horn have the effect of strengthening and reinforcing the horn, while at least four of the patents above specified state that the longitudinal ribs not only strengthen and reinforce the horn but also

improve the sound-producing qualities of the horn.

The following patents of the prior art show that the making of a horn for phonographs by joining together at their edges a plurality of tapering strips of suitable material, extending from one end of the horn to the other, was well known in the art long prior to the date of Nielsen's alleged invention of the patent in suit. These same patents show, as above pointed out, that longitudinal ribs extending from one end of the horn to the other result from such joining together of the tapering strips.

British patent No. 22,273 of 1901 to Runge sets forth, at p. 1, lines 18-20 and p. 2, lines 19-21, that a series of metal strips such as the metal strip B of figs. 2 and 3 may be employed to stiffen or strengthen the horn. The metal strip B consists of two U-shaped metal strips provided with two sockets for receiving the adjacent edges of the tapering strips forming the horn and soldered together. The patent states that the crease or fold C shown in fig. 2 need not be employed and that the metal strip B or a series of them [106] may be substituted therefor. Inasmuch as the metal strip B is formed in the manner above stated, it is obvious that, in the employment of a series of metal Strips B, the horn must necessarily be composed of a series of separate tapering strips of suitable material. In his corresponding French patent No. 321,507 of May 28, 1902, Runge specifically states that the metal strips G' of figs. 1 and 2, of which two or more may be employed, not only serve to strengthen and reinforce the horn but also serve to improve the sound-producing qualities of the

horn (See p. 1, lines 1-4; p. 1, line 61-p. 2, line 2; and claim 1). In his Belgian patent No. 163,518 of May 27, 1902, Runge makes the same showing. In these patents Runge says that he makes his horn of sheet material, for example, celluloid or the like. This necessarily includes such sheet material as metal, for metal, celluloid, wood, paper and other like sheet material had long been known as equivalent materials for the making of horns for phonographs and other like uses. I regard these British, French and Belgian patents as complete anticipations of the Nielsen patent in suit.

British patent No. 20,146 of 1902 to Villy shows, in figs. 1, 2 and 5, a horn of which the large end is composed of a plurality (about twelve) of tapering curved strips of suitable sheet material, joined together at their edges so as to form longitudinal ribs. The small end of the horn appears to be composed of a single piece of sheet material. In this patent of the prior art we have the construction of the Edison straight horn and the Edison Cygnet horn charged with infringement in these suits since the large ends of the Edison horns are composed of a plurality of curved tapering strips joined together at their edges, while the small end of the horns is composed of a single tapering strip of sheet material. The shape of the Villy horn and the [107] shape of the Edison straight horn are practically identical. The Edison Cygnet horn has a long curved small end of the horn, the curve being like the neck of a swan. Nielsen does not show this construction in the patent in suit. Villy specifies that the tapering strips com-

posing the large end of his horn form longitudinal ribs, for he says (p. 3, lines 16-18):

“The angles formed by the meeting of the hinged segments when extended form, as it were, ribs giving rigidity to the trumpet form.”

United States patent No. 763,808 to Sturges, of June 28, 1904, shows a horn composed of sixteen tapering strips of any suitable material. The edges of the tapering strips are beveled (See fig. 2). Sturges states that when these beveled edges come together they produce a strong and durable horn (p. 1, lines 53-58). It is apparent from fig. 2 that the beveled edges produce longitudinal ribs upon the outside of the horn, extending from one end of the horn to the other as do the tapering strips. The patent to Sturges is like the British patent to Villy in that each points out that the angles formed by the adjacent edges of the tapering strips of sheet material form longitudinal ribs strengthening the horn.

British patent No. 5,186 of 1903, to Cockman shows, in figs. 1 and 2, a horn for phonographs, composed of six tapering strips or sections. Cockman states he prefers to use a particular kind of wood instead of sheet metal, paper or ordinary wood (p. 1, lines 1-20; p. 1, line 32-p. 2, line 7). This patent is one of the many patents of the prior art which show the equivalency of sheet metal, paper, celluloid, wood and the like. Cockman says that although he shows six tapering strips in fig. 2 more than six or less than six may be used (p. 2, line 20). He also says that although he has [108] shown curved strips to produce a trumpet of circular section, they may be

flat, thereby producing a trumpet with any desired number of sides (p. 2, lines 21-23). Since Cockman prefers to make his horn of a particular kind of wood instead of sheet metal, he says that he glues the tapering strips of wood together at their edges (p. 2, lines 19-20). He necessarily forms longitudinal seams or ribs upon the outside of the horn, extending from one end of the horn to the other.

United States Patent No. 491,421, of February 7, 1893, to Gersdorff shows, in fig. 2, a funnel or horn composed of three tapering strips of metal, extending from one end of the horn to the other, and joined together at their edges by lock seams. The tapering strips are curved outwardly from the small end of the horn to the large end of the horn, and the horn is bell shape. Gersdorff says that the curved form of the horn and the said lock seams strengthen the horn (p. 1, lines 36-49). He points out that the seams are longitudinal seams, and he describes just how the lock seam is formed (p. 1, lines 79-87). He says that he forms his funnel or horn from "two or more—preferably three"—tapering sections or strips of metal. He describes the construction in claims 1 and 2 of his patent. The three claims of the Nielsen patent read upon Gersdorff's funnel or horn and are, therefore, anticipated, unless the Court limits the claim of the Nielsen patent to the specific construction shown—namely, "tapering strips provided at their edges with longitudinal outwardly directed flanges," which are not employed in the Edison horns and which, however, were very old in the art of making horns for phonographs and

other like instruments, as shown, for example, in British patent No. 17,786 of [109] 1902, to Fairbrother, fig. 6; and United States patents No. 34,907 of August 6, 1901, to McVeety et al., fig. 3; No. 165,912 of July 27, 1875, to Barnard, fig. 5; No. 362,-107 of May 3, 1887, to Penfield, figs. 3-6; No. 406,332 of July 2, 1889, to Bayles, fig. 3; No. 409,196 of August 20, 1889, to Hart, fig. 8; No. 699,928 of May 13, 1902, to McVeety et al., figs. 2 and 3.

The well-known Kaiser horn of the prior art, mentioned above, of which a photograph is annexed to the affidavit of John Kaiser in these suits, was composed of twelve tapering strips of sheet material, joined at their edges so as to form longitudinal ribs. The outline of the Kaiser horn is shown in United States trademark No. 31,772 of July 5, 1898, to Kaiser. One method of constructing the Kaiser horn is shown in United States patent No. 769,410 of September 6, 1900, to Schoettel.

United States patent No. 647,147 of April 10, 1900, to Myers, shows in figs. 3 and 4, a horn composed of eight tapering strips of suitable sheet material, joined together at their edges. Myers states (p. 2, lines 46-81) that he prefers a non-metallic material to form his horn; that the tapering strips may be separate and distinct and joined together by a piece of textile fabric; or that he may make the tapering strips of a single piece of suitable sheet material, scoring or creasing the sheet material at intervals so as to divide it into the proper number of tapering strips. This patent shows that in the prior art it was immaterial whether the tapering strips making

up the horn were made by folding or creasing the sheet material or by cutting the sheet material into separate and distinct tapering strips. In either case longitudinal ribs are formed at the edges of the [110] tapering strips, which longitudinal ribs serve to strengthen and reinforce the horn. British patent to Runge No. 22,273 of 1901, shows (see fig. 2 and p. 2, lines 13-21) that a fold or crease C is the equivalent of a longitudinal metal clip or strip B for strengthening and reinforcing the horn and, as shown by Runge's French patent No. 321,507 of May 28, 1902, (figs. 1 and 2; p. 1, lines 1-4; p. 1, lines 62 to page 2, line 2; claim 1) a fold or crease G⁵ and a metal clip or strip G' at opposite sides of the horn may be used to strengthen and reinforce the horn and to improve the sound-giving qualities thereof, or instead of the fold or crease G⁵ a series of metal clips or strips G; two or more may be employed for the same purpose. In this said French patent Runge claims, in a graphophone or talking machine, a horn having two or more longitudinal reinforcements serving to improve the sound-producing qualities of the horn (claim 1). These two or more longitudinal reinforcements may be a series of metal clips or strips G', either with or without a fold or crease G⁵. Every part of the Nielsen patent in suit is thus anticipated.

United States patent No. 770,024 of September 13, 1904, to Ruggiero et al., shows a horn for phonographs or similar machines, composed of tapering strips of suitable material (figs. 1 and 2).

French patent No. 318,742 of February 17, 1902,

to Turpin, shows a horn for phonographs made of eight or twelve tapering strips of wood, joined together at their edges by means of longitudinal ribs of wood or metal either on the inside or on the outside of the horn and shows that the horn may be in the form of a pyramid or bell shape as desired (see figs. 8-14). As pointed out above, Turpin states that he employs wood in preference to metal; but he [111] also states that strips of metal may be employed in connection with strips of wood. Since it was well known that either metal or wood or any other suitable material could be employed in the making of a horn for a phonograph, and since the idea that the longitudinal ribs resulting from the joining together of the tapering strips composing the horn would improve the sound-producing qualities of the horn, I find no novelty whatever in the Nielsen patent in suit over the French patent to Turpin.

The brass horn of the prior art, produced by E. A. Hawthorne, a photograph of which is annexed to his affidavit in this suit, consisting of five tapering strips of metal, extending from one end of the horn to the other, each strip being curved so as to form a partial cone, and the strips being joined together at their edges so as to form longitudinal ribs extending from one end of the horn to the other is another instance of the manufacture of horns for phonographs in the prior art by the use of a plurality of tapering strips of metal or other suitable material.

The patents and exhibits above referred to show

that horns constructed of tapering strips, in the manner described, were of bell shape. Among the bell-shaped horns of the prior art, constructed of tapering strips, were the Kaiser horn (see United States trademark No. 31,772 of July, 5, 1898, to Kaiser and the photograph of the Kaiser horn of 1898, annexed to Mr. Kaiser's affidavit); the Mega horn of Schoettel (see Schoettel's patent No. 769,410 of September 6, 1904, and the photograph annexed to Mr. Kaiser's affidavit); the two brass horns above described of which photographs are hereto annexed; the horn shown in figs. 1-5 of British patent [112] No. 20,146 of 1902; the horn shown in figs. 14 and 8 of French patent No. 318,742 of February 17, 1902, to Turpin; the horn shown in fig. 1 of French patent No. 321,507 of May 28, 1902, to Runge; the horn shown in figs. 1 and 4 of French patent No. 331,566 of April 28, 1903 to Hollingsworth; the horns shown in figs. 1 and 2 of French patent No. 301,583 of October 9, 1900, to Guerrero; the horns shown in the photograph of the circular of Hawthorne & Sheble Mfg. Co., annexed to the affidavit of Ellsworth A. Hawthorne, herein; the horns shown in the following United States patents:

No. 8,824, of December 7, 1875, to Shirley.

No. 10,235, of September 11, 1877, to Cairns.

No. 491,421, of February 7, 1893, to Gersdorff,
fig. 2.

No. 534,543, of February 1895, to Berliner, fig. 3.

No. 738,342, of September 8, 1903, to Marten, fig. 1.

No. 647,147, of April 10, 1900, to Myers, figs. 1 and
2.

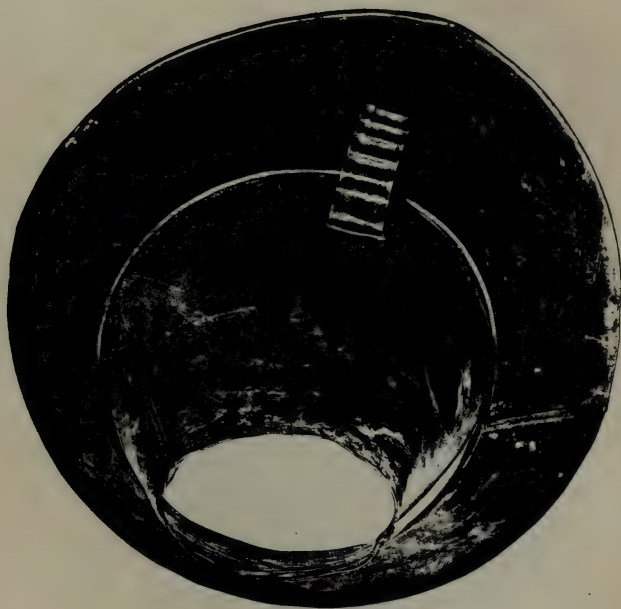
WALTER H. MILLER.

Subscribed and sworn to before me this 5th day of
June, 1913.

[Notary's Seal]

FRANCIS J. McLOUGHLIN,
Notary Public, New York County.
Notary Public, Kings County.

Certificate filed in New York County. [113]





[Affidavit of Edward W. Meeker.]

District Court of the United States, Northern District of California, Second Division.

SEARCHLIGHT HORN COMPANY,

Plaintiff,

vs.

PACIFIC PHONOGRAPH COMPANY,

Defendant.

SEARCHLIGHT HORN COMPANY,

Plaintiff,

vs.

BABSON BROS., INC.,

Defendant.

State of New York,

County of New York,—ss.

Edward W. Meeker, being duly sworn, deposes and says:

I am over the age of twenty-one years and reside at 58 Day Street, Orange, N. J. I have read the annexed affidavit of Walter H. Miller and the statements set forth therein are correct, to the best of my knowledge, information and belief.

About the spring of 1897 I was employed by the National Phonograph Company, and I have continued since that time to be employed by that company and its successor, Thomas A. Edison, Inc., except that on May 1, 1898, I was called away to go to the Spanish-American war. I returned to the [116] plant of the National Phonograph Company at West Orange, N. J. about October, 1898. When I began

my employment with the National Phonograph Company in the spring of 1897 and before I was called away with the United States troops for the Spanish-American war on May 1, 1898, I employed, for the making of announcements at the beginning of the recording of phonograph records, by the employees of the National Phonograph Company, the horn described in the annexed affidavit of Mr. Walter H. Miller, of which a photograph is annexed to said affidavit. The horn referred to is now in the possession of Mr. Hicks, counsel for defendants in the above-entitled suits, and has my initials, "E. W. M." scratched thereon. About six inches have been cut off from the small end of the horn. The horn has been correctly described in the annexed affidavit of Mr. Miller. After my return to the National Phonograph Company in October, 1898, I resumed the use of the said horn for the purpose of making said announcements and continued to use the said horn for such purpose until about 1902, when the National Phonograph Company changed its system of making records. Previously to the time, that is the spring of 1897, when I began to use said horn for making said announcements, said horn had been used by one of the members of the band, principally, Louis Atz, employed by the National Phonograph Company at West Orange, N. J., for the making of announcements. The horn was and is a brass horn. Before it was shortened by cutting off a portion of the small end of the horn it was like the other horn in the possession of Mr. Hicks, of which a photograph is also annexed to the affidavit of Mr. Miller. Such horns

were upon the market in the United States in the spring of 1897 and were [117] manufactured, sold and used as horns for reproducing sound from sound records by means of phonographs. I recognize the horn referred to as the particular horn used by me for the making of said announcements, beginning in the spring of 1897 and the photograph thereof annexed to the affidavit of Mr. Miller is a correct photograph of said horn.

EDWARD W. MEEKER.

Subscribed and sworn to before me this 5th day of June, 1913.

[Notary's Seal]

FRANCIS J. McLOUGHLIN,
Notary Public, County of New York, State of New York.

Notary Public, Kings County.
Certificate filed in New York County. [118]

[**Affidavit of Camillus A. Senne.**]

District Court of the United States, Northern District of California, Second Division.

SEARCHLIGHT HORN COMPANY,
Plaintiff,
vs.
PACIFIC PHONOGRAPH COMPANY,
Defendant.

SEARCHLIGHT HORN COMPANY,

Plaintiff,

vs.

BABSON BROS., INC.,

Defendant.

State of New York,

County of New York,—ss.

Camillus A. Senne being duly sworn, deposes and says:

I am over the age of twenty-one years and am interested in the Reliable Gummed Tape Company, Inc., at 88-90 Cypress Avenue, New York City.

I am the patentee of United States patent No. 811,877 of February 6, 1906 for a Phonograph Horn for which application was filed on November 1, 1904, a copy of which patent is hereto annexed.

In the early part of 1904 I began the manufacture [119] of horns for phonographs. These horns consisted of tapering strips of metal provided with abutting edges that were soldered together. In the latter part of 1904, and before the filing of my said application for patent on November 1, 1904, I began the manufacture of paper horns consisting of curved strips of paper secured together at their edges by metal strips forming longitudinal ribs on the outside of the horn, said tapering strips of paper and said ribs extending from one end of the horn to the other. These tapering horns were similar to the metal horns except that the abutting edges of the tapering strips of metal were soldered together while the abutting edges of the tapering strips of paper were secured together by means of the metal ribs. I

have in my possession one of the said paper horns, which I have submitted to Mr. Hicks, counsel for defendant in this suit; and I annex hereto a photograph of said paper horn. The particular paper horn which I have submitted to Mr. Hicks and a photograph of which I annex hereto was made about February, 1905; and I have marked thereon "C. Senne— May 31 .. 13.. Mfg. 1905," but as stated above I began the manufacture of such horns before November 1, 1904.

In May, 1905, a suit in equity was begun against me and my partner, Peter E. Petersen, by the United States Horn Company in the Circuit Court of the United States for the Southern District of New York. The suit was a patent suit for alleged infringement of United States patent No. 771,441 to Nielsen for a Horn for Phonographs or Similar Machines. The suit was not defended by me or my partner, and a perpetual injunction against infringement of the Nielsen patent was issued against us by default. [120]

At the time of the said suit I and my partner were doing business under the name of the Nova Phonograph Horn Company at No. 2 Manhattan Street, New York City. We continued in business at that place till April, 1906, when we moved to No. 22 Manhattan Street.

After the permanent injunction had been issued against me and my partner I received from the attorney for the United States Horn Company a proposed agreement which I still have in my possession and which I have submitted to Mr. Hicks,

counsel for defendant herein. I annex hereto a full and correct copy of said proposed agreement. Referring to the paragraph numbered "SIXTH" of the said proposed agreement, it will be seen that by the agreement I was to transfer to the United States Horn Company all my right, title and interest in and to an invention of an improvement in phonograph horns described in a certain caveat theretofore filed by me in the Patent Office of the United States. The said improvement in phonograph horns is described in said proposed agreement as

"comprising generally a series of distinct curved paper strips joined together at their side edges by means of metal strips and protected at their exposed ends by means of metal strips."

The said improvement in phonograph horns thus described is illustrated in the paper horn above referred to and of which a photograph is hereto annexed, as aforesaid, said horn consisting of curved tapering strips of paper, joined together at their edges by means of metal strips forming longitudinal ribs and protected at their ends by metal strips. According to said proposed agreement I was to be permitted to manufacture and sell such paper horns upon payment of royalty to said United States Horn Company under the Nielsen patent. [121]

Referring to the paragraph marked "FIFTH" of said proposed agreement my patent application there referred to is my application, Serial No. 231,003 which was filed on November 1, 1904, and resulted in my said patent No. 811,877. It was not filed on February 9, 1905, as stated in said proposed agree-

ment. The Serial No. 231,003 is correctly set forth in the said proposed agreement, though the date of application is incorrect. According to said proposed agreement I was to pay royalty under the Nielsen patent upon the collapsible horn of my said patent.

I called to see the attorney for the United States Horn Company, Mr. Burnham C. Stickney, at his request. When I received the contract which he proposed and sent to me I refused to execute it. I did write my name opposite the seal at the end of the proposed agreement but I never executed the agreement by delivering it so that the agreement was never made.

After having received said proposed contract from said attorney, Mr. Stickney, I called again to see him, but I did not state to him that I had sold my horn business; nor did I state to him that I and my partner, Petersen, had quit the business and would have nothing further to do with the manufacture or sale of phonograph horns. It was not until a year after this interview with Mr. Stickney had occurred in the latter part of 1905 that I and my partner, Petersen, sold our horn business. We sold our horn business either in the latter part of 1906 or the early part of 1907.

After I had refused to sign the said proposed agreement as sent to me by said attorney, Mr. Stickney, a woman called at our place of business at No. 2 Manhattan [122] Street, New York City, and purchased a horn made of paper. This paper horn was similar to the paper horn above described and of which a photograph is annexed hereto, as

aforesaid; but the tapering strips of paper were not separate from each other, and no metal ribs were used. Instead of the metal ribs, longitudinal ribs were pressed along the edges of the curved tapering strips of paper so as to form external longitudinal ribs. In other words, the horn was made of one piece of material, and the ribs were pressed into the paper in such manner as to form tapering strips of the paper, having longitudinal ribs upon the outside of the paper and, therefore, upon the outside of the horn. Immediately after the woman had purchased the said paper horn Christian Krabbe came into our place of business, that is, within the next few minutes, and threatened contempt proceedings on account of the sale of the said paper horn, adding that he would have me arrested. About two days after this occurrence and during the same week, at the request of Mr. Krabbe, I called upon him in Brooklyn, and he offered to buy me out for the sum of five hundred dollars (\$500.00), but I refused the offer. Previously to this visit Mr. Krabbe told me that they did not want to make money by making and selling horns but wanted to make money out of others who were making and selling horns through suits based upon the Nielsen patent and requiring the manufacturers of horns to pay a royalty under the patent. Mr. Krabbe represented the United States Horn Company.

When I and my partner moved to No. 22 Manhattan Street in April, 1906, we continued making paper horns till the middle of 1907. When I went into the business of making and selling gummed tape

I used gummed tape instead [123] of metal strips to join together the edges of the tapering strips of paper since the gummed tape was cheaper than the metal strips. I have in my possession and have submitted to defendant's counsel, Mr. Hicks, one of these horns having the edges of the tapering strips of paper joined together by gummed tape. This horn was made by me in 1907. I annex hereto a photograph of the said horn. It will be seen that the horn is of the same shape and construction as the other horns above described, except that the tapering strips which make up the horn are joined at their edges by means of gummed tape upon the inside and upon the outside of the horn, making longitudinal ribs extending from the small end to the large end of the horn.

I am familiar with metal horns like the two small horns in the possession of defendant's counsel, Mr. Hicks, about twenty-one inches long and consisting of two parts to wit, the flaring part at the large end of the horn and the part composing the rest of the horn, each of said two parts being composed of two tapering strips of metal joined together at their edges, forming lock seams on the outside of the horn, said two parts of the horn being joined together by a lock seam extending around the circumference of the horn. I can see no difference between such horns and the horns of the Nielsen patent here in suit, except for the fact that the so-called Nielsen horns have usually been painted. I regard horns made of paper and other like material as superior to horns made of metal. The longitudinal ribs used

by Nielsen are means merely for joining together the tapering strips of metal which make up the horn. The ribs have no effect upon the sound-giving qualities of the horn. They result merely from the mechanical construction of the horn, and so do the ribs formed [124] in the construction of a paper horn from tapering strips of paper joined together at their edges. Horns made of paper or wood give clearer sounds than do metal horns. In constructing a horn from metal instead of from wood or paper it was obvious in the art of making horns for phonographs that some appropriate means must be employed for joining together the edges of the tapering metal strips of which the horn was made. Hence solder or the lock seam or solder and the lock seam have generally been employed for joining together the tapering strips of a metal horn. Strips of metal or of wood or of paper or other like material, either with or without an adhesive material such as glue, according to the necessities of the case, have been employed as obvious means for joining together the tapering strips of wood, paper, celluloid or other like material employed in the making of a phonograph horn. In each case longitudinal ribs result from the mechanical construction of the horn, whether the horn be made of metal or other material.

I am familiar with the well-known Kaiser horn made of tapering strips of tough paper, secured together at their edges. I was familiar with it, in the city of New York, as early as the year 1901. It had been on the market for several years and was very popular. When I began the making and selling of

horns for phonographs and went about in the city of New York selling horns the Kaiser horn was exhibited to me, and phonograph records were played for exhibition upon talking machines having Kaiser horns.

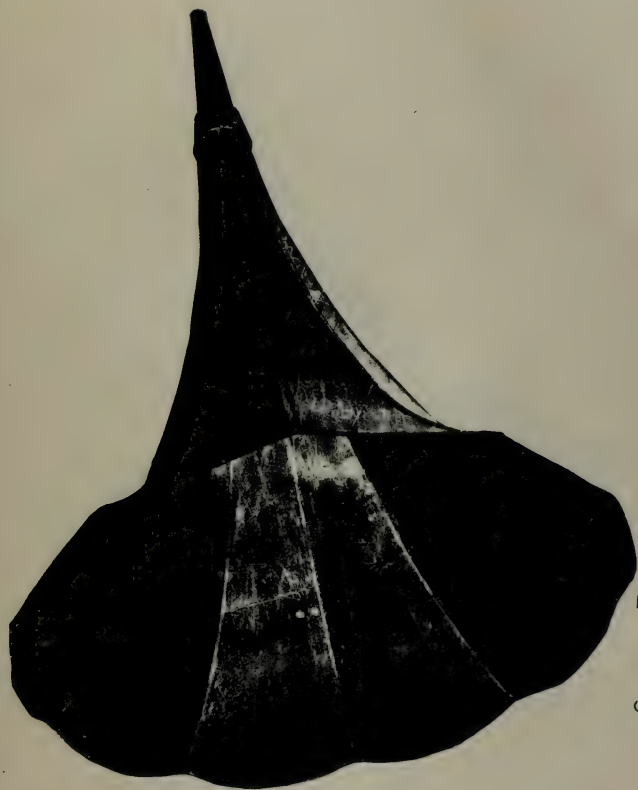
CAMILLUS A. SENNE.

Subscribed and sworn to before me this fifth day of June, 1913.

[Notary's Seal] HERMAN BORSIG, Jr.,

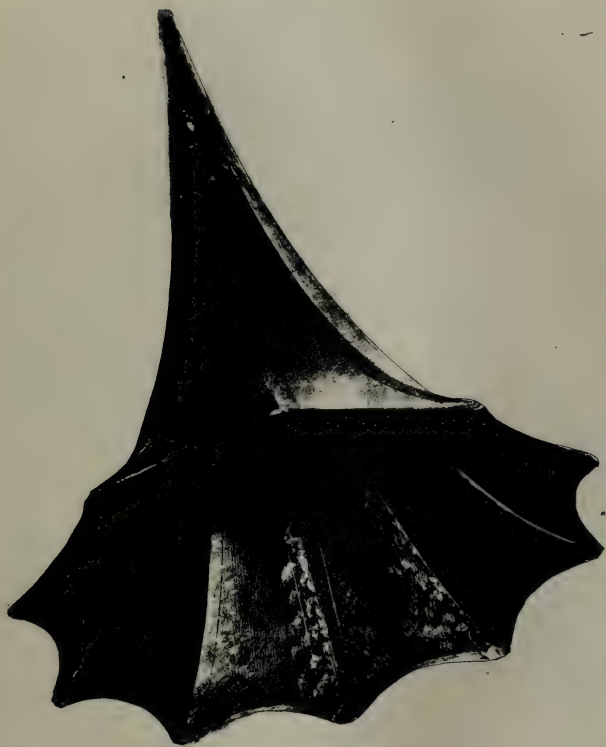
Notary Public, No. 271. New York County.

[125]



Semmes Paper Horn
with
Metal Strips





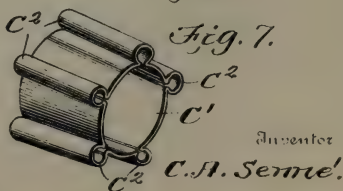
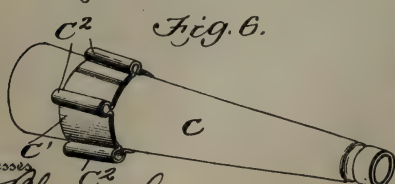
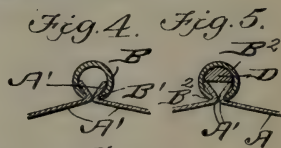
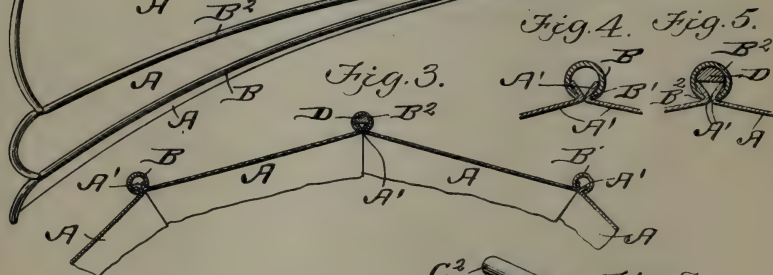
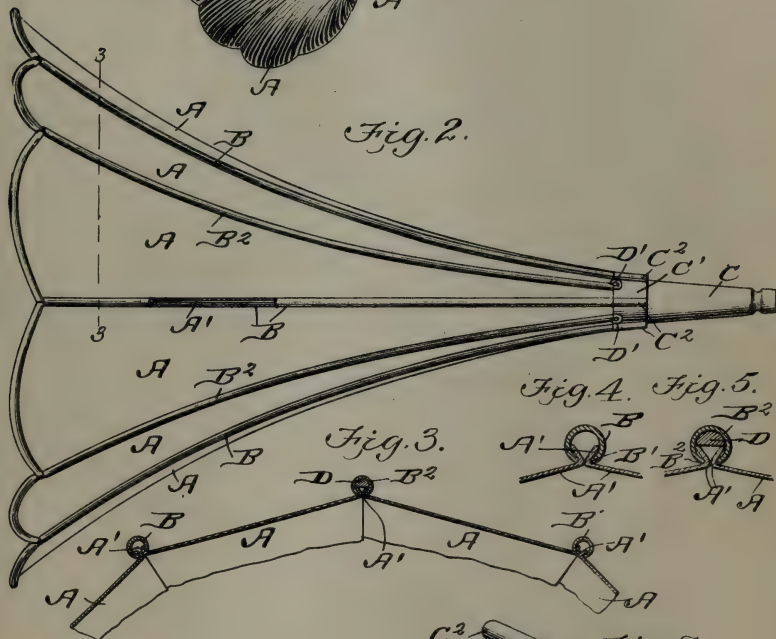
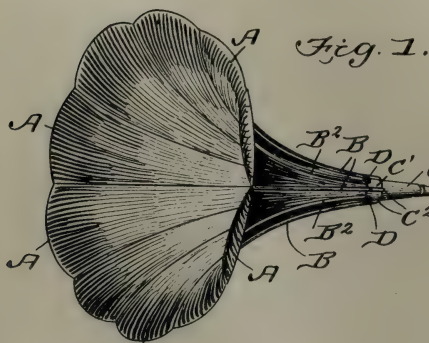
Sennes Paper Horn with
Gummmed-Tape Strips

No. 811,877.

PATENTED FEB. 6, 1906.

C. A. SENNÉ.
PHONOGRAPH HORN.
APPLICATION FILED NOV. 1, 1904.

2 SHEETS—SHEET 1.



Inventory

C. A. Serme'.

Witnesses

Witnesses
M^{rs} Clouzel,
E. B. M^{rs} Bath.

By *O'Meara & Rock*
Attorneys

No. 811,877.

PATENTED FEB. 6, 1906.

C. A. SENNÉ.
PHONOGRAPH HORN.
APPLICATION FILED NOV. 1, 1904.

2 SHEETS—SHEET 2.

Fig. 8.

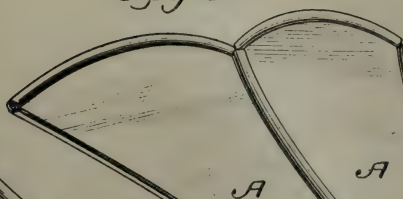


Fig. 9.

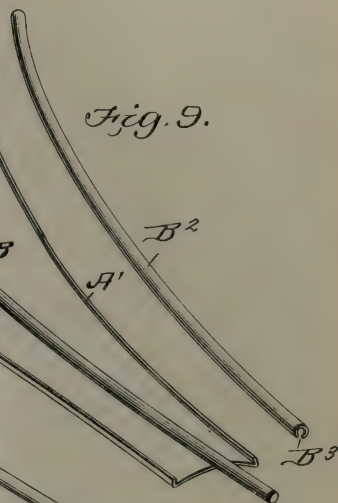


Fig. 9a.

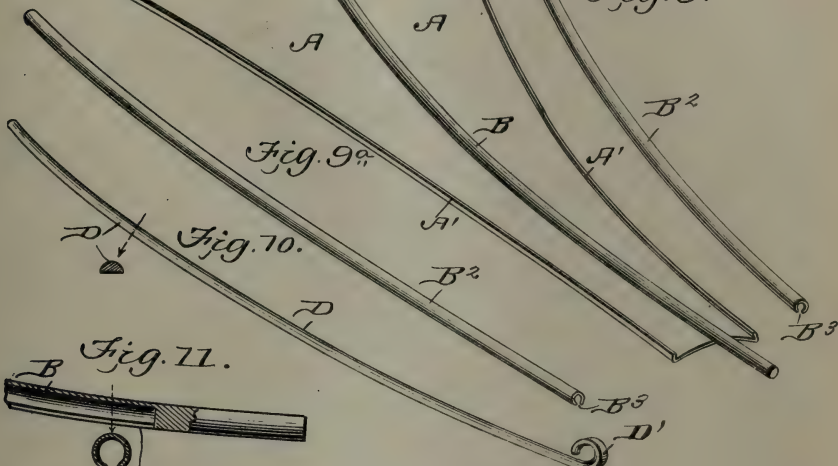


Fig. 10.

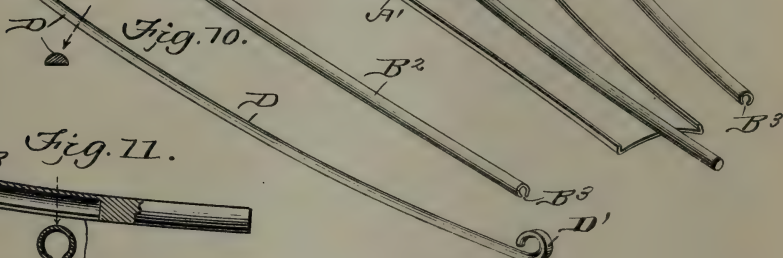


Fig. 11.

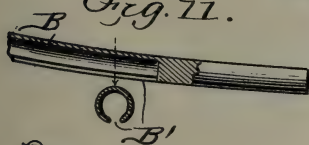


Fig. 14.

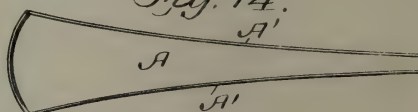


Fig. 12.

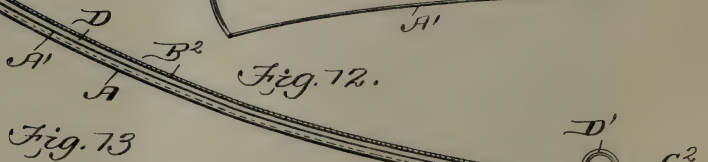
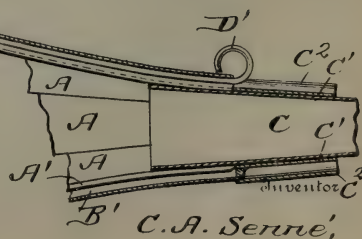


Fig. 13.



Witnesses

W. A. Clouet,
E. B. McBeth.

C. A. Senné,
Attorneys.

PHONOGRAPH-HORN.

No. 811,877.

Specification of Letters Patent.

Patented Feb. 6, 1906.

Application filed November 1, 1904. Serial No. 231,003.

To all whom it may concern:

Be it known that I, CAMILLUS ANTONETTE SENNE', a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented a new and useful Improved Phonograph-Horn, of which the following is a specification.

This invention relates to an improved collapsible horn especially designed for use in connection with phonographs and the like, the object being to provide a horn that may be "knocked down," so that it may be readily packed in a small space and also that its transportation may be facilitated.

With these briefly-stated objects in view, the invention consists in providing a series of blades or sections, each having their edges formed with flanges over which is secured a locking-rib, by which the sections are securely held together, and sleeves having tubular portions engaging alternate ribs, the device as a whole being in the shape of a horn.

The invention also comprises means for holding the horn to the tube-nozzle, which is also employed for locking the sections and holding the horn in a perfectly secure condition.

The invention further consists in certain details of construction and novelties and combinations of parts as will be fully described in the following specification and pointed out in the claims, reference being had to the drawings, in which—

Figure 1 is a perspective view of a horn constructed in accordance with my invention. Fig. 2 is a plan view of the same. Fig. 3 is a detail section on the line 3 3 of Fig. 2. Figs. 4 and 5 are enlarged detail sections drawn through the uniting-ribs and flanges. Fig. 6 is a detail perspective view of the tube-nozzle, showing my improvement arranged therein. Fig. 7 is a detail perspective view of my improved sleeve that fits upon the tube-nozzle. Fig. 8 is a detail perspective view of one of the sections of the horn. Figs. 9 and 9^a are detail views of the hollow uniting-ribs. Fig. 10 is a detail view of one of the strips which are arranged in the ribs. Fig. 11 is a detail section of the inner end of one form of uniting-rib. Fig. 12 is a longitudinal section drawn through one of the uniting-ribs and the tube-nozzle. Fig. 13 is a detail perspective view of the outer end of one of the blades, and Fig. 14 is a detail plan view of a complete blade.

In constructing a horn in accordance with

my invention, I employ a series of blades or strips A, which may be of any suitable material, each being wider at its outer end and tapering upon a curved line to its inner end, so that when all of the blades are assembled they will produce a horn having a flaring mouth, or, in other words, bell-shaped; but this special design is not essential, as the tapering blades may be perfectly straight upon their longitudinal edges, in which case a horn shaped like a truncated cone will be produced. The longitudinal edges of each blade are bent outwardly and inwardly to provide a flange A', over which is placed a tubular rib B, having slots B' arranged upon their lower longitudinal surface through which the flanges project, and by bending the flanges, as described, when the ribs are arranged thereon the sections will be firmly and securely locked together. In practice I propose to arrange these blades in pairs or sections, as shown in Fig. 8 of the drawings, and to permanently retain the ribs B thereon and to provide the ribs of a greater length than the blades, so that their inner ends will project slightly beyond the inner ends of the sections, the projected ends being made solid to add strength to the ribs. In order to hold these sections in position, I provide a tube-nozzle C with a sleeve or band C', which is made of a single length of material and bent at regular intervals to provide a series of tubular sections or barrels C², and in these barrels the projecting ends of the ribs B are held when the horn is complete. As the blades are arranged in sections, as before described, and the ribs B employed for holding the sections together the opposite flanged edges of each section will be free, and to unite them I employ tubular ribs B², slotted throughout their entire length, as shown at B³, and in practice the ribs B² are slipped over the flanges from their inner ends and pushed thereon until the entire surface of the flanges is covered. Of course it will be understood that these ribs B² are of a length to equal that of the longitudinal edges of the blades A, and in order to securely hold them in position and to securely lock them in position I employ strips D, semicircular in cross-section, which are inserted in the ribs so that their flat surface will engage the edges of the flanges, and their circular edges will engage the inner surface of the ribs and in order to facilitate the withdrawal of the strips D and also their insertion into the ribs I propose to

143 bend their inner ends back upon themselves as shown at D'.

In setting up a horn constructed like my invention I first place the sleeve C' upon the hose-nozzle and then take the sections formed by the blades A and insert the projecting ends of the ribs into each of the tubular sections or barrels C'. The ribs B' are then pushed over the flanges of the abutting blades, the strips D inserted into the ribs B', and the complete horn is then produced. It will be readily seen that this operation is exceedingly simple, and it is only necessary to withdraw the ribs and strips from the sections and each section disconnected from the nozzle-tube and the sections may be readily packed into a very small space.

In practice I prefer to bend the free ends of the blades at their outer ends back upon the body of the blade in a circular form and to insert a wire therein, which adds to the artistic effect of the device, besides strengthening the outer ends of the blades as well as avoiding sharp surfaces.

From the foregoing it will also be seen that I provide a collapsible horn so constructed that will take up very little space when in a knocked-down form.

I have found from actual experience that when the horn is set up the vibrations caused by the sound are not impaired and a perfectly clear tone is produced.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A horn comprising a series of blades, each having flanges upon their longitudinal edges, ribs engaging said flanges, and a sleeve having tubular portions in which the alternate ribs are held.

2. A horn comprising a series of blades, each having flanges upon their longitudinal edges, ribs engaging said flanges, a sleeve having tubular portions in which the alternate ribs are held, and a tube-nozzle for supporting the said sleeve.

3. A horn comprising a series of blades, each having flanges upon their longitudinal edges, ribs engaging the flanges, the alternate ribs projecting beyond the inner ends of the blades, a sleeve having tubular sections in which the projecting ends of the ribs are held, a tube-nozzle for supporting the sleeve and strips engaging the remaining alternate ribs.

4. A horn comprising a series of flanged blades arranged in pairs, the blades of each pair being united by means of ribs which extend beyond the inner ends of the blades, tubular ribs for uniting the abutting edges of each pair, and means for engaging the projecting ends of the first-named ribs.

5. A horn comprising a series of blades arranged in pairs each pair having a rib projecting therefrom, a sleeve having tubular portions in which the projected ends of the

ribs are held, tubular ribs for uniting the edges of each pair of blades, strips arranged within the said tubular ribs, and a tube-nozzle for supporting the sleeve.

6. A horn comprising a series of tapering blades, each being flanged upon their longitudinal edges, tubular ribs engaging the abutting flanges of each blade for locking the said blades together, the alternate ribs projecting beyond the inner ends of blades, a sleeve having tubular sections in which the projected ends of the ribs are held, and a tube-nozzle for supporting the sleeve.

7. A horn comprising a series of blades, each being tapered from its outer to its inner end, and flanged along the said tapering edges, tubular ribs engaging the flanges for uniting the blades, the alternate ribs projecting beyond the blades and made solid, strips arranged within the opposite alternate ribs, and a sleeve connected to the projected ends of the ribs.

8. A horn of the kind described, comprising a series of tapering blades arranged in pairs, each blade being flanged upon its longitudinal tapering edges, said blades being arranged in pairs, ribs engaging the flanges to unite the blades to form the pairs, said ribs projecting beyond the inner ends of each pair, a sleeve having tubular portions in which the projected ends of the ribs are held, tubular ribs engaging the abutting flanges of each pair, and strips arranged within the last-named ribs.

9. A horn of the kind described, comprising a series of tapering blades, each having a flange upon its longitudinal edges, said blades being arranged in pairs, and held together by tubular ribs, the ends of which project beyond the inner ends of the blades, a sleeve having tubular portions in which the projected ends of the ribs are held, tubular ribs engaging the abutting flanges of each pair of blades, semi-cylindrical strips arranged within the last-mentioned ribs and engaging the flanges of the blades for the purpose specified.

10. A horn comprising a series of longitudinal tapering blades, each having its longitudinal edges bent outwardly and inwardly to form flanges which diverge when the abutting edges of the flanges are placed together, tubular ribs fitting over the flanges, the alternate ribs projecting beyond the inner ends of the blades, a sleeve having tubular sections in which the said projecting ends of the ribs are held, the remaining alternate ribs being of the same length as the blades, and strips arranged within the last-mentioned ribs, said strips having one end bent to provide a ring all substantially as and for the purpose specified.

CAMILLUS ANTONETTE SENNÉ.

Witnesses:

M. D. BLONDEL,
E. M. VENN.

**[Memorandum of Agreement Between U. S. Horn
Co. and Camillus A. Senne.]**

MEMORANDUM OF AGREEMENT made and entered into this —— day of ——, 1905, by and between the UNITED STATES HORN COMPANY, a corporation organized and existing under and by virtue of the Laws of the State of New York, and having its principal office and place of doing business in the Borough of Brooklyn, City and State of New York, party of the first part, and CAMILLUS A. SENNE, of No. 2 Manhattan Street, in said City and State of New York, party of the second part.

WHEREAS said United States Horn Company is the sole and exclusive owner of United States Letters Patent, No. 771,441, granted to Peter C. Nielsen for an improvement in horns for phonographs or similar machines;

AND WHEREAS, an infringement suit in which said Company was Complainant, and said Senne was a defendant in the Circuit Court of the United States for the Southern District of New York, has been terminated by the entry of a decree in said Court, against said Senne and others, and an injunction in due form of law has been served upon said Senne and others associated with him, prohibiting him and them from making, using or selling phonograph horns infringing said patent during the remainder of the term of the life of said patent.

NOW, THEREFORE, it is agreed as follows:

FIRST: Said Senne covenants and agrees to pay to said Company, upon each and every horn man-

ufactured or sold by him or his associates, a sum equal to five per cent of the price at which said Senne or his associates sells phonograph horns embodying the invention set forth in said patent and including horns similar to those heretofore manufactured and sold by said Senne, as shown by the horn marked "Exhibit A" and attached to this agreement provided [131] that not less than three cents are to be paid on each horn by said Senne and his associates to said Company.

SECOND: Said royalties are to be paid on the first days of January, April, July and October, in each year, upon all horns sold more than thirty days prior to said dates; and said Senne covenants to make and furnish each month to said Company, a statement showing the number of horns made and sold during the current month, and also the names and addresses of the vendees. Said Senne covenants to keep separate books of accounts showing the number of horns manufactured, and, which horns shall be consecutively numbered, and which books shall show the names and addresses of the persons, firms or corporations to whom such horns shall be sold, and said books shall be opened to the inspection of said Company, or its duly authorized agent or attorney, at all reasonable times at the manufactory or establishment of said Senne in the City of New York.

THIRD: Upon each of said horns, Senne is to stamp or permanently affix the following: "Patented October 4, 1905, No. 771,441."

FOURTH: Said Senne for himself, his associates, agents, successors and assignees, covenants not to

ignore or contest at any time hereafter said Letters Patent.

FIFTH: Said Senne hereby transfers, assigns and confirms unto said United States Horn Company, all right, title and interest in and to a certain application for United States Letters Patent, No. 231,003, filed Feb. 9, 1905, for Improvements in phonograph horns, reserving, however, to himself the right to manufacture and sell horns in accordance with said applications, but upon all such horns said Senne covenants to pay royalties, as aforesaid, to said [132] Company, and said Company covenants to prosecute said application, and obtain the issuance of patent thereon, and it further covenants not to license or grant any rights thereunder to any person or concern, other than said Senne or his nominees.

SIXTH: Said Senne hereby further transfers, assigns and confirms unto said United States Horn Company, all right, title and interest in and to an invention of an improvement in phonograph horns, embodied in horns heretofore generally manufactured and sold by said Senne, and described in a certain Caveat heretofore filed by said Senne in the Patent Office of the United States ("Exhibit A" attached hereto being a copy of the drawing accompanying said Caveat and now on file in said Patent Office), and comprising generally a series of distinct curved paper strips joined together at their side edges by means of metal strips, and protected at their exposed ends by means of metal strips, and covenants to execute all applications and instruments desired by the United States Horn Company in order to secure for

and to it a patent of the United States upon said improvement, and to assign to said Company such application and patent, reserving however to himself the right to manufacture and sell horns in accordance with said invention, application and patent, but upon all such horns said Senne covenants to pay royalties as aforesaid to said Company; and said Company covenants to prosecute said application at its own proper expense, and obtain, if possible, the issuance of patent thereon, and it further covenants not to license or grant any rights thereunder to any person or concern, other than said Senne or his nominees. [133]

SEVENTH: Said Senne further covenants for himself and associates, that he will not sell horns at any time during the life of said Nielsen patent for less than the average price at which corresponding horns are sold by other manufacturers in the same market; and said Senne further covenants, that in case two or more concerns manufacturing horns extensively, shall agree with said Company not to sell horns below certain specified prices, said Senne or his associates will not sell corresponding horns below the same prices.

EIGHTH: Said United States Horn Company hereby stipulates with said Senne that there shall be excepted from the operation of said injunction all horns manufactured or sold by said Senne or his associates in accordance herewith, this exception to continue, however, only so long as said Senne and his associates shall perform promptly and in good faith each and all of the covenants herein made by him;

but it is further stipulated by the parties hereto, that said injunction otherwise is and shall be fully binding and operative upon said Senne for himself and his associates; it being understood that in case said Senne and his associates, agents, successors and assigns carry out in good faith all the promises and covenants herein made by said Senne, then and in that event such exception shall not be withdrawn by said United States Horn Company, its successors or assigns, at any time during the life of the said Nielsen patent.

IN WITNESS WHEREOF, said Company has caused this agreement and stipulation to be signed by its ———, and its corporate seal to be hereto affixed, and said Senne has hereto set his hand and seal, the day and year first above written.

UNITED STATES HORN COMPANY,

By _____,

(Sgd.) C. SENNE. [Seal] [134]

State of New York,

City and County of New York,—ss.

On this ——— day of ———, 1905, personally appeared before me Camillus A. Senne, to me known and known to me to be the person described in and who executed the foregoing instrument, and acknowledged to me that he executed the same.

[Seal]

_____,
Notary Public. [135]

[Affidavit of Louis Hicks Dated June 7, 1913.]

District Court of the United States, Northern District of California, Second Division.

SEARCHLIGHT HORN COMPANY,
Plaintiff,

vs.

PACIFIC PHONOGRAPH COMPANY,
Defendant.

SEARCHLIGHT HORN COMPANY,
Plaintiff,

vs.

BABSON BROS., INC.,
Defendant.

State of New York,
County of New York,—ss.

Louis Hicks, being duly sworn, deposes and says:

I am of counsel for defendants in the above-entitled suits and have my office at No. 233 Broadway, New York City. I have examined the record in the suit of United States Horn Company, Complainant, against Peter E. Petersen and Camillus A. Senne, Defendants, being Equity suit No. 9072, in the office of the clerk of the Circuit Court of the United States for the Southern District of New York. The subpoena *ad respondendum* and the bill of complaint were filed on May 1, 1905. The bill alleged that complainant was a New York corporation having its principal office in Brooklyn, New York; that Peter C. Nielsen made application for United States patent No. 771,-

441, which was issued on October 4, [136] 1904; that on February 2, 1905, said Nielsen assigned said letters patent and all his right, title and interest in the invention granted to him thereby to Christian Krabbe of Brooklyn; that on February 14, 1905, said Krabbe assigned to William H. Locke, Jr., of Brooklyn, New York, an undivided one-half interest in said patent; and that on February 24, 1905, said Krabbe and said Locke assigned their interests to the United States Horn Company. The record further shows that Burnham C. Stickney appeared as solicitor for complainant; that Frederick S. Stitt appeared as solicitor for defendants on June 5, 1905, and that Warner, Johnson & Galston were substituted as solicitors for defendants on October 30, 1905. Defendants having filed no answer to the bill, a decree *pro confesso* was entered against them and in accordance with said decree *pro confesso* a perpetual injunction was issued against defendants enjoining them "from further infringing the same (Nielsen patent No. 771,441), and from manufacturing, using or selling the said infringing phonograph horns, or any phonograph horns containing or embodying the invention or inventions embraced in said letters patent."

The record further shows that the defendants, after the issue of said perpetual injunction, moved to set aside the said decree, *pro confesso*, and for leave to interpose a defense; that the motion was granted upon the condition that defendants file a bond in the sum of two hundred and fifty dollars (\$250.00) to secure complainant against costs; but

that the defendants did not avail themselves of the leave so granted and did not interpose any defense.

Among the papers on file in said suit is an affidavit of Burnham C. Stickney, solicitor for complainant, a [137] full and complete copy of which is hereto annexed, except the exhibits referred to in said affidavit. I have read the original affidavit of said Burnham C. Stickney, on file in the clerk's office, and have obtained from the clerk a certified copy thereof, with the exception of the exhibits annexed to the affidavit, which are immaterial for the purposes of this suit; and therefore know that the annexed copy of said affidavit is correct. I annex a copy of the affidavit of said Burnham C. Stickney in order to show that he mailed to Camillus A. Senne, on behalf of the United States Horn Company, the proposed agreement of which a copy is annexed to the affidavit of said Senne, filed on behalf of defendants in the above-entitled suits.

I have had in my possession, since March, 1902, a copy of a book entitled "A Complete Manual of the Edison Phonograph," by George E. Tewksbury, published at Newark, New Jersey, in 1897. I annex hereto a photograph of the illustration of Horns for Phonographs, appearing on p. 70 of said book. In the chapter headed "Horns and Tubes," appearing on pp. 71-75, inclusive, of said book, the following statements appear:

"With the Phonograph a speaking tube and listening tube are provided. The speaking tube for dictation purposes meets the conditions acceptably. The single tube for listening is the

best device for the purpose. But for concert use and public entertainment, the sound must be thrown out so that many persons can hear it, and for this purpose numerous types of amplifying horns have been produced. It would astonish the casual reader to learn of the number and thoroughness of the experiments in that direction. Mr. Edison has himself tried a vast number of sizes and shapes, out of all sorts of material. Other experimentalists and enthusiasts have gone over the same ground, and branched out into new paths. Yet all have come back to the main travelled road. Wood, iron, steel, zinc, copper, brass, tin, aluminum, cornet metal, german silver, have been tried. Glass, too, and hard rubber, papier-maché, and probably every other product that nature yields or man contrives. The latitude as to form and shape being greater than the resource in material, there have been [138] almost innumerable attempts in that line. After all of which it may be said that tin and brass, defective as they are, have been settled upon as the most available, and the forms now known in the trade as the most desirable. Any horn to be good must come out of sound metal, and be perfectly joined. Ordinary joining will not do, and imperfect metal is a delusion. * * * ”

“The 26-inch standard tin horn is deservedly the amplifying device most used, and all things considered, gives as good results as any. It is not expensive, can be used for recording and reproducing both, and fulfills all reasonable re-

quirements of horn service. When correctly made, block tin is used, and the joints are so fastened as to prevent rattle. If made of cheap material, it is the same abomination that all other cheap supplies for the Phonograph are. The horn is heavily japanned, not for looks merely. It is held in place on a folding tripod, to the loop of which it should be attached by string, ribbon, or other non-conducting material, never by a metal hook or wire. The connection with the speaker of the Phonograph is effected by a short length of rubber tubing. In the use of this, as with all other large horns, the best results are obtained many feet away from the mouth of the horn, which is so built as to project the volume of tone forward. The measurement at the bell or opening of this horn is 12 inches, and the lines from the bell to the nipple are straight. Similar in results, but different in character, is the 22-inch brass horn, preferred by some because it is thought to give a more ringing effect to the reproduction of band and orchestra music, and claimed by others to make all reproduction brighter. This horn has a flaring bell, and is 12 inches in width at its mouth. It is suspended the same as the 26-inch horn to the loop of a folding stand, and makes a striking appearance.

* * *

“The interesting picture facing this chapter shows a group of recording horns used in a record laboratory. It was drawn from a photograph.”

I submit herewith copies of the following French patents, together with translations thereof in the English language, to wit:

No. 301,583, of June 23, 1900, to Guerrero;

No. 318,742, of February 17, 1902, to Turpin;

No. 321,507, of May 28, 1902, to Runge;

No. 331,566, of April 28, 1903, to Hollingsworth.

[139]

I have made the translations of the foregoing French patents and the translations are correct.

I have obtained from the Commissioner of Patents a certified copy of the file wrapper and contents of the Nielsen patent in suit, No. 771,441, and I annex hereto a full, true and complete copy thereof.

I have obtained a certified copy of Belgian patent No. 163,518 of May 28, 1902, to W. C. Runge. The description, claims and drawings of said Belgian patent are precisely the same as the description, claims and drawings of French patent No. 321,507 of May 28, 1902, to W. C. Runge. Therefore I deem it unnecessary to submit a copy of the said Belgian patent upon this motion although it has been referred to in the affidavits filed on behalf of defendants, since the French patent makes the same showing as the Belgian patent.

I annex hereto an illustration of Scott's phonograph of 1857. This illustration appeared in the *Electrical World* for November 12, 1887, on page 256, published in New York, N. Y. It also appeared as part of a paper read before the Franklin Institute on May 16, 1888, by Emile Berliner (See Vol. 125, p. 425 of the *Journal of the Franklin Institute*,

printed and published in 1888 in Philadelphia, Pa., by the Franklin Institute). This illustration shows the phonautograph patented by Scott in France in 1857, as I know from a certified copy of Scott's French patent of 1857. Reference to the illustration shows that the first horn employed for the recording of sound waves consisted of tapering strips (eight in number) extending [140] from one end of the horn to the other. The horn is larger at one end than at the other and tapers in the usual manner. The tapering strips are secured together at their edges thus forming longitudinal seams and ribs extending from one end of the horn to the other. I have been familiar with the patents and literature of the United States and foreign countries, relating to phonographs for more than fifteen years, and I have spent many years in litigation over patents relating to phonographs and like machines. Claim 3 of the Nielsen patent in suit is anticipated by the horn of Scott's phonautograph of 1857 since, obviously, the tapering strips of which the horn of Scott's phonautograph consists are secured together at their edges and form longitudinal seams and ribs on the outer side thereof. This is clearly indicated by the angles formed upon the outside of the horn of Scott's phonautograph where the edges of the tapering strips are joined together. The only difference between claims 1 and 2 of the Nielsen patent and the horn of Scott's phonautograph is one of degree, in that Nielsen's outwardly directed flanges extend a little further out than do the angles formed by the joining together of the tapering strips of Scott's horn. Reference to the

United States patent No. 362,107 of May 3, 1887, to Penfield shows, in fig. 2, a metallic barrel made up of tapering strips of metal, provided with inwardly directed flanges whereby said strips are connected, precisely like Nielsen's horn, except that the flanges extend inwardly instead of outwardly. The circumference of Penfield's metallic barrel is circular and does not show the ribs of the horn of Scott's phonograph upon the outer side thereof. I refer to Penfield's metallic barrel, merely to show that as early as 1857 the construction of horns for phonographs followed the methods of constructing such instruments by workers in the tinsmith's or sheet metal art, Fig. 2 of United [141] States patent No. 491,421, of February 7, 1893, to Gersdorff, shows a horn or funnel consisting of a plurality of tapering strips joined together at their edges by lock seams forming longitudinal ribs upon the outside of the horn or funnel. The horns for phonographs, similarly made, are nothing but the horns or funnels of the Gersdorff patent, it being apparent that, whether the horn or funnel be used in one way or another, the horn or funnel remains the same instrument. A horn for a phonograph is nothing but a funnel, and it is immaterial whether it be used to convey sound or to convey a liquid. It is capable of either use without any change or adaptation whatsoever.

LOUIS HICKS.

Subscribed and sworn to before me this 7th day of June, 1913.

[Notary's Seal] FRANCIS J. McLOUGHLIN,
Notary Public, Kings County.

Certificate filed in New York County. #10.
[142]

[Affidavit of Burnham C. Stickney.]

*United States Circuit Court for the Southern Dis-
trict of New York.*

UNITED STATES HORN COMPANY,

Plaintiff,

against

PETER E. PETERSEN and CAMILLUS A.
SENNE,

Defendants.

State of New York,

County of New York,—ss.

Burnham C. Stickney, being duly sworn, deposes and says:

That Peter E. Petersen and Camillus A. Senne, at the time of the filing of the bill of complaint, in this action, and long prior thereto, were partners doing business in the Southern District of New York, under the name and style of Nova Phonograph Horn Co., as appears in the bill of complaint in this case, and as also appears by a certified copy of the public records of the State of New York hereto annexed and marked Exhibit "A." Annexed hereto and marked Exhibit "B" is a postoffice registry return receipt addressed to me and signed "Nova Phono Horn Co., C. Senne," which was received by me in the early part of May, 1905.

On or about June 6th, 1905, I received a letter from

Frederick S. Stitt, and signed by him, notifying me that he had entered his appearance as solicitor for defendants Petersen and Senne in this action, and requesting me to serve all papers on him at his office, and further requesting me to send him a copy of the bill of complaint. Said letter is annexed hereto and marked Exhibit "C." I immediately [143] furnished said Stitt with a copy of the bill of complaint.

Thereafter I suggested to Mr. Stitt, that his clients agree with my clients with regard to a royalty under the Nielsen Patent in suit.

On or about the 14th day of June, 1905, I received through the mail from said Stitt, an envelope which is annexed hereto and marked Exhibit "D" which contained a letter which is also annexed hereto and marked Exhibit "E." Said letter is signed by Mr. Stitt, and it notified me, that he had on that day, June 14th, been in consultation with Mr. Senne, and that Mr. Senne desired him to inform me, that Petersen and Senne were not willing to accept my proposition to pay royalties, and that Petersen and Senne proposed to defend the suit. Said letter concludes as follows:

"At the same time I wish to inform you that I have severed my connection with this case and in the future any papers should be served on the defendants personally until you are otherwise advised.

Very truly yours,

FREDERICK S. STITT."

I heard nothing further directly or indirectly from Mr. Stitt or from the defendants, until after the in-

junction herein had been served upon said defendants. Immediately after the service of said injunction, said Senne called at my office, No. 132 Nassau St., and stated to me, that he did not defend the suit, because he had concluded that it would be unwise and inexpedient for him to do so, and he also remarked to me; that it would have cost him and Petersen more to defend the suit, than they would make out of the horn business in an entire year. He then offered me on behalf of himself and Petersen to pay a royalty to the complainant herein of three cents upon each horn manufactured [144] by the defendants. I told him that I would consult with my clients in regard to his offer. My clients were willing to accept such royalty. A day or two after said first interview with Senne, he again called at my office, and talked with me as to the terms of a contract of royalty, and on the same day I prepared such contract, and mailed it to Senne.

A few days after said second interview, said Senne again called at my office, and stated that he had sold, for a large sum of money, his horn business including his unfinished and finished horns, his tools and goodwill to a certain concern, whose name he refused to give me. He further stated at this third interview, that the concern to whom he had made the sale had placed the whole matter in the hands of its attorneys. Senne further stated at said interview that he had been to see the attorneys of said concern, and that they had told him that they would have the decree and injunction in this suit set aside.

Said Senne also stated to me in said third inter-

view that he and his partner Petersen had quit the business, and would have nothing further to do with the manufacture or sale of phonograph horns.

I have no information of the name of the concern, or persons, to whom the defendants have sold their business.

BURNHAM C. STICKNEY.

Subscribed and sworn to before me this 9th day of November, 1905.

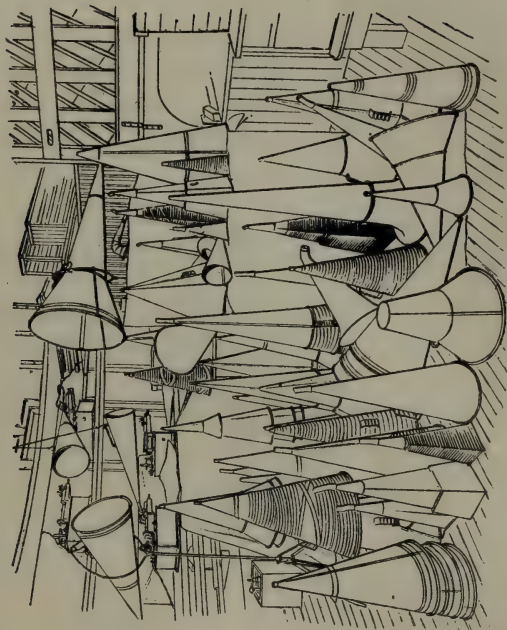
JOHN M. RUCK,
Notary Public, N. Y. Co.

[Endorsed]: U. S. Circuit Court, Southern District of New York. Filed Nov. 10, 1905. John A. Shields, Clerk.

A true copy.

ALEX. GILCHRIST, Jr.,
Clerk.

[Seal: District Court of the United States, Southern District of N. Y.] [145]



2-390.

UNITED STATES OF AMERICA,
DEPARTMENT OF THE INTERIOR,

United States Patent Office.

To all to whom these presents shall come, Greeting:

THIS IS TO CERTIFY that the annexed is a true copy from the Records of this Office of the File Wrapper, Contents and Drawing in the matter of the

Letters Patent of

Peter C. Nielsen,

Number 771,441,

Granted October 4, 1904.

for

Improvement in Horns for Phonographs or Similar
Machines.

IN TESTIMONY WHEREOF I have hereunto set
my hand and caused the seal of the Patent
Seal—Patent Office United States of America. Office to be affixed at the City of Wash-
ington, this 25th day of March, in the year
of our Lord one thousand nine hundred and
thirteen and of the Independence of the
United States of America the one hundred and
thirty seventh.

F. H. TENNANT,

Acting Commissioner of Patents.

6-1625. [147]

2-437.

NUMBER (SERIES OF 1900).

203,080.

1904.

DIV 23

(EX'R'S BOOK). 114

9

(04)

PATENT No. 771,441

,190 Name—Peter C. Nielsen

of Greenpoint

County of

State of New York

filed Invention—Horn for Phonographs and Similar
Machines

Original.

Renewed.

Division of App., No.
PARTS OF APPLICATION FILED.

Petition	Apr. 14, 1904	, 190
Affidavit	“ “, 1904	, 190
Specification	“ “, 1904	, 190
Drawing	“ “, 1904	, 190
Model or Specimen Not reqd	, 190	, 190
First Fee Cash		
\$15.00	Apr. 14, 1904	, 190
“ “ Cert.	190	, 190
Appl. filed complete	Apr. 14, 1904	, 190

Examined J. T. Newton Ex.

Sept. 2, 1904 , 190

Countersigned R. E. Grant

For Commissioner.

For Commissioner.

Notice of Allowance,

Sept. 3, 1904 , 190

Final Fee, Cash \$20,

Sept. 12, 1904 , 190

“ “ Cert. , 190 , 190

Patented October 4 , 1904

Associate Attorney—Wm. N. Cromwell

1003 F. St. N. W.,

City

Attorney—Edgar Tate & Co.

245 Broadway

New York City

Name Serial Number

Patent No. Date of Patent [148]

No. 203080 No 1/2

\$15 RECEIVED filed

APR 14 1904 Ck Apl 14/04

CHIEF CLERK U. S. PATENT OFFICE

NEW YORK,

April 13, 1904.

Hon. Commissioner of Patents,

Washington, D. C.

Sir:—

We beg to enclose herewith application of Peter
C. Nielsen for Letters Patent for Horns for Phono-

graphs and Similar Machines, together with check for \$15, the Government filing fee thereon.

Very respectfully,

EDGAR TATE & CO. [149]

MAIL ROOM

APR 14 1904

No 203080 No 1/2

U. S. PATENT OFFICE.

Appl'n filed

Apl 14/04

PETITION.

To the Commissioner of Patents:

Your petitioner, PETER C. NIELSEN, a citizen of the United States and residing at Greenpoint in the County of Kings and State of New York and having a post-office address at 23 Drake Ave., Greenpoint, Brooklyn, N. Y. prays that Letters Patent may be granted to him for the improvements in HORNS FOR PHONOGRAPHS AND SIMILAR MACHINES set forth in the annexed specification; and he hereby appoints Edgar Tate and William W. Canfield of the firm of EDGAR TATE & CO., 245 Broadway, New York, or their accredited agent to act as his attorneys to prosecute this application, with power to make alterations and amendments therein, to sign the drawings, to receive the patent, and to transact all business in the Patent Office connected therewith.

PETER C. NIELSEN.

SPECIFICATION.

To all whom it may Concern:

Be it known that I, PETER C. NIELSEN a citizen of the United States and residing at Greenpoint

in the County of Kings and State of New York have invented certain new and useful improvements in **HORNS FOR PHONOGRAPHS AND SIMILAR MACHINES** of which the following is a specification, such as will enable those skilled in the art to which it appertains to make and use the same. [150]

This invention relates to the horn of a phonograph or other machine of this class and the object thereof is to provide a horn for machines of this class which will do away with the mechanical, vibratory, and metallic sound usually produced in the operation such machines, and also produce a full, even and continuous volume of sound in which the articulation is clear, full and distinct.

The invention is fully disclosed in the following specification, of which the accompanying drawing forms a part, in which the separate parts of my improvement are designated by suitable reference characters in each of the views, and in which;—

Fig. 1 is a side view of my improved phonograph horn;

Fig. 2 an end view thereof;

Fig. 3 an enlarged section on the line 3-3 of Fig. 1; and

Fig. 4 a longitudinal section on the line 4-4 of Fig. 3.

In the practice of my invention, I provide a horn *a* provided at its smaller end with the usual nozzle piece *a2* by means of which connection is made with the machine, and in the form of construction shown a supplemental piece *a3* is employed between the larger or body portion of the horn and the nozzle piece *a2*,

but the parts *a3* and *a2* may be formed integrally if desired, and may be constructed in any desired manner.

The main part *a* of the horn is bell-shaped in form and tapers outwardly gradually from the part *a3* to the larger or mouth end *a4* and this curve or taper is greater or more abrupt adjacent to said larger or mouth end.

The body portion of the horn is also composed of a plurality of longitudinal strips *b* which are gradually tapered from one end to the other and which are connected longitudinally so [151] as to form longitudinal ribs *b2*, each of the strips *b* being provided at its opposite edges with a flange *b3*, and these flanges, of the separate strips *b*, are connected to form the ribs *b2*.

The body portion of the horn, or the strips *b* are composed of sheet metal, and it will be observed that the inner wall of the body portion of said horn in cross section is made up of a plurality of short lines forming, substantially, a circle, and it is the construction of the body portion of the horn as hereinbefore described, that gives thereto the qualities which it is the objects of this invention to produce, which objects are the result of the formation of the horn, or the body portion thereof of longitudinal strips *b*, and providing the outer surface thereof with the longitudinal ribs *b2*, and curving the body portion of the horn in the manner described.

If desired, the part *a3* may be formed integrally with the body portion of the horn in which event the ribs *b2* would extend to the nozzle or connecting por-

tion *a2*, and it is the longitudinal ribs *b2*, which contribute mostly to the successful operation of the horn, said rib serving to do away with the vibratory character of horns of this class as usually made and doing away with the metallic sound produced in the operation thereof.

My improved horn may be used in connection with phonographs, or other machines of this class, and changes in and modifications of the construction described may be made without departing from the spirit of my invention or sacrificing its advantages.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent, is:—
[152]

1. A horn for phonographs and similar machines, the body portion of which is composed of longitudinally arranged strips of metal provided at their edges with longitudinal outwardly directed flanges whereby said strips are connected and whereby, the body portion of the horn is provided on the outside thereof with longitudinally arranged ribs, substantially as shown and described.

2. A horn for phonographs and similar machines, the body portion of which is composed of longitudinally arranged strips of metal provided at their edges with longitudinal outwardly directed flanges whereby said strips are connected and whereby, the body portion of the horn is provided on the outside thereof with longitudinally arranged ribs, said strips being tapered from one end of said horn to the other, substantially as shown and described.

B/26/04

3. A horn for phonographs and similar machines, said horn being tapered in the usual manner and the body thereof on the outer side thereof being provided with longitudinally arranged ribs, substantially as shown and described.

Insert A

[153]

IN TESTIMONY that I claim the foregoing as my invention I have signed my name in presence of the subscribing witnesses this 13th day of April, 1904.

PETER C. NIELSEN.

Witnesses:

F. A. STEWART.

C. J. KLEIN.

OATH.

STATE OF NEW YORK,
COUNTY OF NEW YORK,—ss.

PETER C. NIELSEN, the above-named petitioner, being duly sworn, deposes and says that he is a citizen of the United States and resident of Greenpoint in the County of Kings and State of New York; that he verily believes himself to be the original, first and sole inventor of the improvements in HORNS FOR PHONOGRAPHS AND SIMILAR MACHINES described and claimed in the annexed specification; that he does not know and does not believe that the same was ever known or used prior to his invention thereof, or patented or described in any printed publication in the United States of America or any country foreign thereto before his invention thereof, or more than two years prior to this application, or in public use or on sale

in the United States for more than two years prior to this application; and that no application for a patent has been filed by him or his legal representatives or assigns in any country foreign to the United States.

PETER C. NIELSEN.

Sworn to and subscribed before me this 13th day of April, 1904.

[Seal]

W. W. CANFIELD,
Notary Public. [154]

Div. 23 379 J. H. D. 2-260

Paper No. ——— Rejection

Address only

“The Commissioner of Patents,
Washington, D. C.”

All communications respecting this application should give the serial number, date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR.
UNITED STATES PATENT OFFICE.

Washington, D. C., May 13, 1904.

MAILED

” ” ”

Peter C. Nielsen,

Care Edgar Tate & Co.,

#245 Broadway,

New York, N. Y.

Please find below a communication from the EXAMINER in charge of your application for Horn for Phonographs & Similar Machines, filed April 14, 1904, serial number 203,080.

F. I. ALLEN.

E. B. MOORE,

c6-2631

Commissioner of Patents.

Claim 3 of this application is rejected in view of Tourtels Eng. Pat. #20,557 of 1902, Graphophones, and U. S. Patent of Fallows, Aug. 15, 1876, #181,-159, Games and Toys, Toys, Sounding, it being held that it would not constitute patentable invention to provide a horn with longitudinal ribs, in view of the transverse ribs of Fallow's and the longitudinal rib of Tourtel.

J. T. NEWTON, Ex.

J.H.L. [155]

MAIL ROOM

No. 2

JUN 7 1904

Amdt. A

U. S. PATENT OFFICE.

C—6/7/04.M

IN THE UNITED STATES PATENT OFFICE.

Room #379.

In re Application of PETER C. NIELSEN,

Horn for Phonographs and Similar Machines,

Filed April 14, 1904. Ser. #203,080.

To the Commissioner of Patents,

Sir:—

We desire to amend the above entitled case as follows:

Add the following claim:

~~6/28/04 4. A horn for phonographs and similar machines, said horn
A being tapered in the usual manner and the body thereof on the
outer side thereof being provided with longitudinally arranged
ribs between which the longitudinal parts of the horn taper
from one end to the other, substantially as shown and described.~~

Insert B

REMARKS.

This amendment is made in view of the Official communication of May 13. The references cited in

this case do not show a horn for talking machines having longitudinally arranged ribs on the outer side thereof. One of the references cited shows spirally arranged ribs, but this in no sense anticipates applicant's invention. This arrangement of the ribs would make the horn vibrate more and cause more of a metallic sound than if no ribs at all were formed on it. It is the longitudinally arranged ribs on the outer side of the horn which produce the result claimed by applicant, and favorable action is respectfully requested.

Respectfully submitted,

EDGAR TATE & CO.,

Attorneys for Applicant.

Dated New York, June 6, 1904. [156]

Div. 23 379 2-260 Paper No. ——— Rej.
J. H. D.

Address only

“The Commissioner of Patents,
Washington, D. C.”

All communications respecting this application should give the serial number, date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR.
UNITED STATES PATENT OFFICE.

WASHINGTON, D. C., June 22, 1904.

MAILED " " "

Peter C. Nielsen,
Care Edgar Tate & Co.,
#245 Broadway,
New York, N. Y.

Please find below a communication from the EX-AMINER in charge of your application for Horn for Phonographs and Similar Machines, filed April 14, 1904, serial number 203,080.

F. I. ALLEN.

E. B. MOORE,

c6-2631

Commissioner of Patents.

This action is in response to the amendment filed the 7th instant.

Claims 3 and 4 are rejected in view of the patent of Clayton, Oct. 18, 1898, #612,639, (181-25), the part "A" in said patent being considered the equivalent of applicant's horn as defined in claims 3 and 4 though said part "A" be more flaring than applicant's horn.

J. T. NEWTON, Ex.

J. H. L. [157]

MAIL ROOM

No. 4.

JUN 22 1904

Amdt. B

U. S. PATENT OFFICE.

6/22/04

IN THE UNITED STATES PATENT OFFICE.

Room 379.

In the Matter of the Application of PETER C.
NIELSEN,

Horn for Phonographs and Similar Machines,

Filed April 14, 1904. Ser. No. 203,080.

Hon. Commissioner of Patents,

Washington, D. C.

Sir:—

We desire to amend the above entitled case as follows:

Add the following claim:—

~~3. A horn for phonographic and similar instruments, said~~

~~horn being larger at one end than at the other and being composed~~

~~of longitudinal tapered strips which are secured together at their~~

~~edges, substantially as shown and described.~~

Insert C

REMARKS.

This amendment is supplemental to that dated June 6th 1904 and it is respectfully requested that said amendment be entered and the case considered in view thereof.

Respectfully submitted,

EDGAR TATE & CO.,

Attorneys for Applicant.

Dated New York, June 21, 1904. [158]

MAIL ROOM

No. 5

JUN 28 1904

O. Amdt. C.K.

U. S. PATENT OFFICE.

6/29/04

IN THE UNITED STATES PATENT OFFICE.

Room #379.

In re Application of PETER C. NIELSEN,

Horn for Phonographs and Similar Instruments.

Filed April 14, 1904. Ser. No. 203,080.

To the Commissioner of Patents,

Sir:—

We desire to amend the above entitled case as follows:—

Add the following claim:

36—A horn for phonographs and similar instruments, said horn being larger at one end than at the other and tapered in the usual manner, said C horn being composed of longitudinally arranged strips secured together at their edges and the outer side thereof at the points where said strips are secured together being provided with longitudinal ribs, substantially as shown and described.

REMARKS.

This amendment is made in view of the Official communication of June 22nd. We have carefully considered Clayton the new reference cited and we do not see any similarity therein to applicant's device either in construction or operation. The object of applicant's construction is to destroy the vibratory character of a phonographic horn, and this cannot be done by corrugating the horn as all

forms of corrugations increase the vibration instead of diminishing it. This fact ought to be apparent on its face and there is nothing in the references that meet claims 3 and 4 and favorable action thereon as well as on claims 6 presented herewith is requested.

Respectfully submitted,
EDGAR TATE & CO.,
Attorneys for Applicant.

Dated New York, June 28, 1904. [159]

Div. 23 379 2-260 Paper ——— Rej.
Address only

“The Commissioner of Patents,
Washington, D. C.”

All communications respecting this application should give the serial number, date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR.
UNITED STATES PATENT OFFICE.
WASHINGTON, D. C., July 21, 1904.
MAILED ” ” ”

Peter C. Nielsen,
Care Edgar Tate & Co.,
#245 Broadway,
New York, N. Y.

Please find below a communication from the EX-AMINER in charge of your application for Horn for Phonographs and Similar Machines, filed April 14, 1904, serial number 203,080.

F. I. ALLEN.

E. B. MOORE,

c6-2631

Commissioner of Patents.

This action is in response to the amendments filed the 22nd and 29th instants.

It is believed that it cannot constitute patentable invention to provide any horn with longitudinal stiffening ribs to render the horn perhaps less vibratory. Claims 3, 4 and 5 are held to be devoid of patentable novelty and invention in view of this holding and the prior art exhibited by the patents cited and the patent of Osten et al., July 22, 1902, #705,126, (181-27).

J. T. NEWTON, Ex.

J.H.L. [160]

MAIL ROOM

No. 7

JUL 27 1904

Argument

U. S. PATENT OFFICE.

7/27/04

IN THE UNITED STATES PATENT OFFICE.

ROOM 379.

In the Matter of the Application of PETER C.
NIELSEN,

Horn for Phonographs and Similar Machines,

Filed April 14, 1904. Ser. No. 203,080.

Hon. Commissioner of Patents,

Washington, D. C.

Sir:—

The Official communication of July 21st has been received and considered. This communication states that "it is believed that it cannot constitute patentable invention to provide any horn with longitudinal stiffening ribs to render the horn perhaps less vibratory," and Claims 3, 4 and 5 are rejected. We do not understand what bearing if any this statement

has on Claim 5 and an explanation is requested before further amendment of the case.

Respectfully submitted,

EDGAR TATE & CO.,

Attorneys for Applicant.

Dated New York, July 26, 1904. [161]

Div. 23 379 2-260 Paper No. ——— Rejection
M. E. P.

Address only

“The Commissioner of Patents,
Washington, D. C.”

All communications respecting this application should give the serial number, date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR.

UNITED STATES PATENT OFFICE.

WASHINGTON, D. C., August 5, 1904.

Mailed Aug 5/ 04

Peter C. Nielsen,

c/o Edgar Tate & Co.,
New York City.

Please find below a communication from the EX-AMINER in charge of your application Serial No. 203,080, filed April 14, 1904, for Horn for Phonographs and Similar Machines.

F. I. ALLEN.

E. B. MOORE,

c6-2631

Commissioner of Patents.

This action is responsive to letter filed the 27th ultimo.

Claims 3 and 4 are rejected in view of the holding that it cannot constitute patentable invention to

provide any horn with longitudinal stiffening ribs to render the horn perhaps less vibratory. These claims and claim 5 are rejected also in view of the patents cited and the patent of Osten *et al* referred to in the last action.

J. T. NEWTON, Ex.

J. H. L. [162]

U. S. PATENT OFFICE

RECEIVED

No. 9.

AUG 17 1904

Asso-Power

DIVISION 25

IN THE UNITED STATES PATENT OFFICE.

ROOM 379.

In the Matter of the Application of PETER C.
NIELSEN,

Horn for Phonographs and Similar Machines,

Filed April 14, 1904. Ser. No. 203,080.

Hon. Commissioner of Patents,

Washington, D. C.

Sir:—

We hereby appoint William N. Cromwell 1003 F Street, N. W. Washington, D. C. our associate attorney in the above entitled case.

Respectfully submitted,

EDGAR TATE & CO.,

Attorneys for Applicant.

Dated New York, Aug. 16, 1904. [163]

U. S. PATENT OFFICE. No. 10

RECEIVED. Amdt.

AUG. 26, 1904.

DIVISION 23.

IN THE UNITED STATES PATENT OFFICE.

Before the Examiner,—Room 379.

In re Application of PETER C. NIELSEN,

Horn for Phonographs and Similar Machines,

Filed April 14, 1904, Serial No. 203,080.

HON. COMMISSIONER OF PATENTS,

Sir:

The above-entitled application is hereby amended as follows:

Cancel claims 3, 4 and 5.

REMARKS.

The above amendment places this case in condition for allowance, and such action is respectfully requested at an early date.

Very respectfully,

W. N. CROMWELL,

Associate Attorney. [164]

2—181.

Issue Division.

Serial No. 203,08

All communications should be addressed to "The
Commissioner of Patents, Washington, D. C."

DEPARTMENT OF THE INTERIOR,

U. S. Patent Office,

Washington, D. C., Sept. 3, 1904,190.

Peter C. Nielsen,

% W. N. Cromwell,

City.

SIR:—Your Application for a patent for an
IMPROVEMENT IN Horn for Phonographs and
Similar Machines.

.....
.....
Filed April 14, 1904, 1, has been examined and
ALLOWED.

The final fee, Twenty Dollars, must be paid, and
the Letters Patent bear date as of a day not later
than SIX MONTHS from the time of this present
notice of allowance.

If the final fee is not paid within that period the
patent will be withheld, and your only relief will be
by a renewal of the application, with additional fees,
under the provisions of Section 4897, Revised Stat-
utes. The Office aims to deliver patents upon the
day of their date, and on which their term begins to
run; but to do this properly applicants will be ex-
pected to pay their final fees at least TWENTY
DAYS prior to the conclusion of the six months
allowed them by law. The printing, photolitho-

IN REMITTING THE FINAL FEE GIVE THE SERIAL NUMBER AT THE HEAD OF THIS NOTICE.

If payment is made by check or draft, the credit allowed is subject to the collection of the same.

graphing, and engrossing of the several patent parts, preparatory to final signing and sealing, will consume the intervening time, and such work will not be done until after payment of the necessary fees.

When you send the final fee you will also send **DISTINCTLY AND PLAINLY WRITTEN**, the name of the **INVENTOR**, and **TITLE OF INVENTION AS ABOVE GIVEN**, **DATE OF ALLOWANCE** (which is the date of this circular), **DATE OF FILING**, and, if assigned, the **NAMES OF THE ASSIGNEES**.

If you desire to have the patent issue to **ASSIGNEES**, an assignment containing a **REQUEST** to that effect, together with the **FEE** for recording the same, must be filed in this Office on or before the date of payment of final fee.

After issue of the patent uncertified copies of the drawings and specifications may be purchased at the price of 5 cents each. The money should accompany the order. Postage stamps will not be received.

Respectfully,

F. I. ALLEN,

Commissioner of Patents.

After allowance, and prior to payment of the final fee applicants should carefully scrutinize the description to see that their statements and language are correct, as mistakes not incurred through the fault of the office, and not affording [165] legal grounds for reissues, will not be corrected after the delivery of the letters patent to the patentee or his agent.
[166]

184 *Pacific Phonograph Company vs.*

\$20 RECEIVED.

Ck Sep 12 1904 Z

CHIEF CLERK U. S. PATENT OFFICE.

NEW YORK,

Sept. 10, 1904.

Hon. Commissioner of Patents,
Washington, D. C.

Sir:—

We beg to enclose herewith our check for \$20 final Government fee in the matter of the application of Peter C. Nielsen, Phonograph Horn, filed April 14, 1904, Ser. No. 203080, Allowed Sept. 3, 1904, and beg to request that the patent be duly issued.

Very respectfully,

EDGAR TATE & CO. [167]

2-191. Serial No. 203,080.

Address only

“The Commissioner of Patents,
Washington, D. C.”

DEPARTMENT OF THE INTERIOR.
C.E.R. UNITED STATES PATENT OFFICE.
Washington, D. C. Sept. 12, 1904.

Peter C. Nielsen,
C/o Edgar Tate & Co.,
245 Broadway,
New York, N. Y.

Sir:

You are informed that the final fee of TWENTY DOLLARS has been received in your application for Improvement in

Horn for Phonographs and Similar Machines.

Very respectfully

F. I. ALLEN.

E. B. MOORE,

Commissioner of Patents.

6-1784 [168]

2-421.

1904

CONTENTS:

Print

$\frac{1}{2}$ Application 1 papers.

1. Rej May 13/04.
2. Amdt. A. June 7/04.
3. Rej June 22/04.
4. Amdt. B. June 22/04.
5. Amdt. C. June 29/04.
6. Rej July 21/04.
7. Argument July 27/04.
8. Rej Aug. 5/04.
9. Asso-Power Aug. 17/04.
10. Amdt. Aug. 26/04.
- 11.
- 12.
- 13.
- 14.
- 15.
- 16.
- 17.
- 18.
- 19.
- 20.

186 *Pacific Phonograph Company vs.*

21.

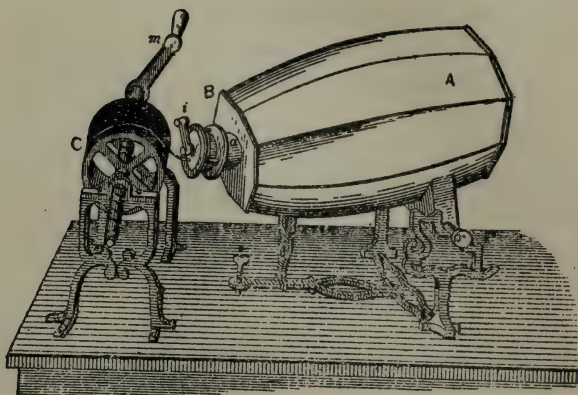
22.

23.

TITLE:

Improvement in Horn for Phonographs or Similar
Machines. [169]

FIG. 1.



Scott's Phonautograph.—1857.

While Bourseuil's conception was being digested by Reis, another invention, having also a membrane diaphragm as its motive principle, was patented in France in 1857. This was the phonautograph, by Léon Scott, which had for its purpose the recording of sound vibrations upon a cylinder rotated by hand and moved forward by a screw (Fig. 1). The cylinder was covered with paper, this was smoked over a flame, and a stylus attached to the center of a diaphragm, under the influence of words spoken into a large barrel-like mouthpiece, would trace sound vibrations upon the smoky surface. Scott also employed an animal membrane for his diaphragm, and took pains, by means of an attachment called a subdivider, to make the vibrations appear as large as possible. This subdivider,

[Endorsed]: Filed Jun. 16, 1913. W. B. Maling,
Clerk. By J. A. Schaertzer, Deputy Clerk. [171]

[Affidavit of Louis Hicks, Filed June 23, 1913.]

*In the District Court of the United States for the
Northern District of California, Second Di-
vision.*

SEARCHLIGHT HORN COMPANY,
Plaintiff,

vs.

BABSON BROTHERS INCORPORATED,
Defendant.

SEARCHLIGHT HORN COMPANY,
Plaintiff,

vs.

PACIFIC PHONOGRAPH COMPANY,
Defendant.

State of California,
City and County of San Francisco,—ss.

Louis Hicks, being duly sworn, deposes and says:

I am of counsel for defendants in the above-en-
titled suits and have heretofore made an affidavit
therein. Since leaving New York City on June 10,
I have read a copy of the testimony in the former
action at law on the Nielsen patent in this Court
against Sherman Clay & Co. I find that William
H. Locke, Jr., testified October 1, 1912, on direct
examination, by Mr. Miller, that he was President of
the plaintiff, Searchlight Horn Company; that in
May, 1908, the Searchlight Horn Company ceased to

do business and turned over its machinery and the whole matter of manufacturing and selling horns to the Standard Metal Mfg. Co. of [172] Newark, N. J.; that the Standard Metal Mfg. Co. thereafter manufactured horns in accordance with the Nielsen patent here in suit, said horns being like the horns sold by the Victor Talking Machine Co.; and that the Standard Metal Mfg. Co., under said arrangement, paid a royalty to the Searchlight Horn Co. for said horns made and sold by it (Record, pp. 59-61). Mr. Locke also testified October 1, 1912, on direct examination (Record, p. 62);

“Q. The whole matter has been turned over to the Standard Metal Manufacturing Company under the terms which you stated? A. Yes.

Q. Just give us some idea of the size of the Standard Metal Manufacturing Company and its ability to supply the market? A. Well, the Standard Metal Manufacturing Company to-day, is the largest manufacturer of talking machine horns in the country. It manufactures the bulk of the horns for the Edison Phonograph Company and the Victor Talking Machine Company.”

I have been informed by Mr. Delos Holden, General Counsel for the Thomas A. Edison, Inc., and believe and, therefore, allege that the said Standard Metal Mfg. Co. has been making for said Thomas A. Edison, Inc., and its predecessor, National Phonograph Company, continuously since May, 1908, metal horns for phonographs of the kind alleged by plaintiff to infringe the Nielsen patent in suit. Said

Thomas A. Edison, Inc., and its predecessor, National Phonograph Company, has been the company putting upon the market "the Edison Phonograph" since 1896-1897, and is and has been known, for that reason, as the Edison Phonograph Company, to which Mr. Locke referred in his testimony above quoted. It appears therefore, that the horns sold by defendants and charged with infringement are horns put upon the market by the authority of the plaintiff.

I also find that in said former action at law, plaintiff's expert, Mr. Vale, testified (Record, p. 85):
[173]

"Q. How does a rib differ mechanically from a seam?

A. Well, a rib is a thickening in cross-section within narrow longitudinal limits of the body of any material. It might be an overlapping of that material, or it might be an integral thickening of it and still be a rib.

The COURT.—Q. There might be a rib without a seam? A. Yes.

Q. And a seam might be so constructed as to constitute a rib? A. Yes."

Mr. Krabbe testified that Nielsen made horns, under his patent, by joining together the adjacent edges of the tapering strips composing the horns, by means of overlapping seams, that is, by placing one edge upon or over the adjacent edge and soldering them together. (Record, pp. 26, 119, 85 and Exhibit 12.)

Mr. Vale also testified (Record, p. 96) that the Nielsen patent "says here 'plurality of longitudinal

strips' ”; and he added (Record, p. 96):

“Q. Two would be a plurality, would it not?

A. Yes.”

Upon the question of *laches*, Mr. Krabbe, and Mr. Locke testified, in the said former action at law, that both before and after Nielsen filed his application for the patent in suit, others were constantly making and selling in this country, horns claimed to infringe the patent (Record, pp. 18, 20, 47, 58, 65). Mr. Locke also testified that he tried to “get together” with the Hawthorne & Sheble Co., with regard to the making and selling of horns, calling upon them, (Record, p. 58), thus confirming what Mr. Hawthorne says in his affidavit.

LOUIS HICKS.

Subscribed and sworn to before me this 23d day of June, 1913.

[Seal]

C. W. CALBREATH,

Deputy Clerk U. S. Dist. Court, Northern District
of California. [174]

[Endorsed]: Filed Jun. 23, 1913. W. B. Maling,
Clerk. By J. A. Schaertzer, Deputy Clerk. [175]

[**Affidavit of C. D. Emerson.**]

*In the District Court of the United States for the
Northern District of California, Second Di-
vision.*

IN EQUITY—No.—.

On Nielsen Patent No. 771,441
(Phonograph Horn).

SEARCHLIGHT HORN COMPANY,

vs.

PACIFIC PHONOGRAPH COMPANY.

IN EQUITY—No.—.

On Nielsen Patent No. 771,441
(Phonograph Horn).

SEARCHLIGHT HORN COMPANY,

vs.

BABSON BROTHERS, INCORPORATED.

State of New York,

County of New York,—ss.

C. D. Emerson, being duly sworn, deposes and says: I am of lawful age and reside in the city of Orange, N. J. I have been in the talking-machine business over twenty years.

During the period 1897–1904, I was employed in New York City by the Columbia Phonograph Co. (General). I have just delivered to Messrs. Mauro, Cameron, Lewis & Massie, patent attorneys, located in the Woolworth Building, in the City of New York, a phonograph horn which was constructed for me by the Tea Tray Co. in the latter part of 1897 or

early in 1898, and which has been in my possession continuously ever since. This horn was used by me upon talking machines (graphophones and phonographs), openly and publicly, in the regular course of business, and in giving public exhibitions, in the city of New York, during the years 1898, 1899, 1900, and 1901. During that period we procured from said Tea Tray Co. and used, in similar manner, a number of other sectional sheet-metal horns substantially identical with the one already referred to. During about [176] the same period, but perhaps a little later, yet earlier than the year 1904, we procured, and used, a number of flaring sheet-metal phonograph horns, substantially similar to the ones already referred to, except that they were made up of *three* longitudinal sections with *three* longitudinal joints constituting ribs, and were provided with a unitary "bell mouth." These three-section horns were used in New York City, in public, prior to 1904, for reproducing sound-records upon graphophones.

This horn made for me is a flaring horn. It consists of a plurality of longitudinal sections, made of tapering pieces of sheet-metal, united by interlocking joints to constitute external stiffening-ribs that extend longitudinally the full length of the horn.

Our purpose in making this horn in sections with longitudinal ribs, was to stiffen the horn, and in order to prevent the tendency to metallic vibrations of the walls of the otherwise too-sensitive sheet-metal horn.

I annex hereto, as part of this affidavit, a correct photograph of said horn, which latter is now before

me. I have identified said horn by scratching thereon my initials and the date of this affidavit: "C. D. E. 6/18/1913", and have left the same with Mr. Massie. The photograph thereof is herein inserted on the following page:

(Signed) C. D. EMERSON.

Subscribed and sworn to before me this 18th day of June, 1913.

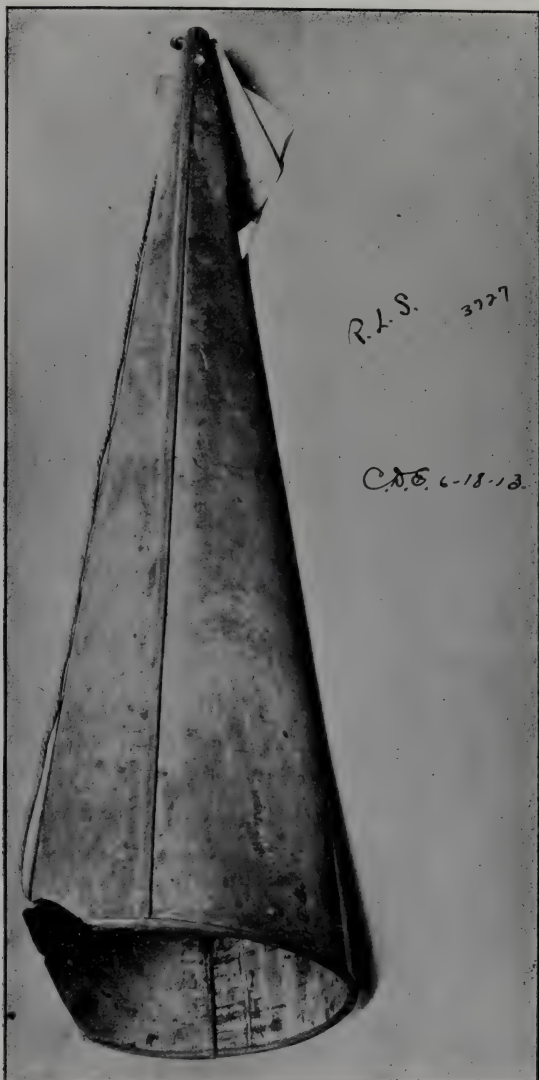
[Seal] (Signed) RALPH LANE SCOTT,
Notary Public, No. 3727, New York County. [177]
No. 29,246.

State of New York,
County of New York,—ss.

I, William F. Schneider, Clerk of the County of New York, and also Clerk of the Supreme Court for the said County, the same being a Court of Record, do hereby certify, that James Lane Scott, before whom the annexed deposition was taken, was, at the time of taking the same, a notary public of New York, dwelling in said county, duly appointed and sworn, and authorized to administer oaths to be used in any court in said State, and for general purposes; that I am well acquainted with the handwriting of said notary, and that his signature thereto is genuine, as I verily believe.

In testimony whereof, I have hereunto set my hand and affixed the seal of the said Court and County, the 18th day of June, 1913.

[Seal] WM. J. SCHNEIDER,
Clerk. [178]



[Affidavit of August Robert Pommer.]

*In the District Court of the United States, for the
Northern District of California, Second Division.*

SEARCHLIGHT HORN COMPANY,

Plaintiff,

vs.

BABSON BROTHERS, INCORPORATED,

Defendant.

SEARCHLIGHT HORN COMPANY,

Plaintiff,

vs.

PACIFIC PHONOGRAPH COMPANY,

Defendant.

August Robert Pommer, being duly sworn, deposes and says:

I am over the age of twenty-one (21) years and reside in San Francisco. I have been engaged in the phonograph business ever since the year 1893. I became engaged in the phonograph business in 1893 at Sacramento, California, and continued there in that business until January 10th, 1910, when I purchased the jobbing business of the Pacific Phonograph Company and came to San Francisco. In March, 1910, I purchased the jobbing phonograph business of Peter Bacagalupi & Sons. In January, 1901, I later purchased the jobbing business of the A. J. Pommer Company of Sacramento.

For at least eight years, I have known of the

Flower Horns made and sold by Hawthorne & Sheble of Philadelphia, Pa. [180] Those horns were made of a number of tapering strips of metal joined together at their edges by seams, forming longitudinal ribs, the construction being similar to the construction of the flaring end of the Edison Straight Horns. Such horns of the Hawthorne & Sheble Company were upon the market in Sacramento at least eight years ago. I have also known of similar horns made by the Standard Metal Mfg. Company being upon the market in California for several years last past.

I never heard of the Nielsen patent here in suit until the trial of the suit upon that patent against Sherman Clay & Co. in the latter part of 1912. I never heard, prior to the trial of that suit, any suggestion or threat of litigation with respect to such horns as the above-described Flower Horns, made and sold by Hawthorne & Sheble or similar horns, and had no reason to suppose that anyone claimed that the making or selling of such horns infringed upon any patent or other right.

Ever since 1893, when I began the phonograph business, I have made a very careful study of the sound producing qualities of horns for phonographs and I have tested many horns in order to ascertain their sound producing qualities. As a result of my study, experiments and experience of twenty years with horns for phonographs, I have no hesitation in saying that it is my positive conclusion that there is no difference in the sound producing qualities of a metal horn, whether it is composed of a single piece

of metal and provided with one longitudinal seam or rib, or whether it is composed of several tapering strips of metal and provided with several longitudinal seams or ribs. In other words, the sound producing qualities of the Hawthorne & Sheble Black and Gold horn and the sound producing qualities of their Flower horn were and are the same. They each give forth the same metallic sound. In my opinion, a horn composed of a single piece of metal, [181] and provided with only one longitudinal seam or rib, is superior to the other horn described, since there is less tendency on the part of the horn to rattle. Horns made of wood are superior to horns made of metal, and are now, and have heretofore been sold in large quantities upon the market.

AUGUST ROBERT POMMER.

Subscribed and sworn to before me this 20th day of June, A. D. 1913.

[Seal]

J. D. BROWN,

Notary Public in and for the City and County of San Francisco, State of California.

Due service of the within Affidavit by copy is hereby admitted this 19th day of June, 1913.

J. H. MILLER,

Attorney for Plaintiff. [182]

[Affidavit of Peter Bacigalupi.]

*In the District Court of the United States, for the
Northern District of California, Second Division.*

SEARCHLIGHT HORN COMPANY,

Plaintiff,

vs.

BABSON BROTHERS, INCORPORATED,

Defendant.

SEARCHLIGHT HORN COMPANY,

Plaintiff,

vs.

PACIFIC PHONOGRAPH COMPANY,

Defendant.

State of California,

City and County of San Francisco,—ss.

Peter Bacigalupi, being duly sworn, deposes and says:

I am over the age of 21 years and am the senior member of the firm of Peter Bacigalupi & Sons, doing business in phonographs and supplies therefor, at 908 Market Street, San Francisco. I have been in the phonograph business, in the City of San Francisco, ever since the year 1894.

Mr. Hicks, counsel of defendants herein, has exhibited to me the photographic copy of the advertisement [183] annexed to the affidavit of Mr. E. A. Hawthorne herein, said advertisement showing the well-known black and gold horn and the flower

horn, made and sold for many years, throughout the United States. Said flower horn is similar in its construction to the Edison straight horn, in that each is composed, in whole or in part, of a number of tapering strips of metal joined together at their edges. To my knowledge, such horns as the flower horn of the said Hawthorne advertisement, have been upon the market in the United States for more than eight years. For many years I have dealt in horns manufactured by Hawthorne & Sheble, including said black and gold horn, which is provided with one longitudinal seam or rib and said flower horn, which is provided with several longitudinal seams or ribs. I have made numerous tests of the sound producing qualities of said two horns and similar horns, especially tests thereof for intending purchasers of horns. I never was able to see any difference in the sound producing qualities of such horns notwithstanding my long experience in the phonograph business, beginning as above stated in 1894. I do not believe any difference in the sound producing qualities of horns for phonographs, results from the number of longitudinal ribs or seams with which the horn is provided or from the number of strips of sheet material of which the horn is composed. Said black and gold horn and said flower horn of said Hawthorne advertisement have the same sound producing qualities, and each gives forth the same metallic sound.

Until the suit upon the Nielsen patent against Sherman Clay & Company came to trial, in the latter part of 1912, I had never heard of said Nielsen

patent; nor had I ever heard of any threats of litigation made with respect to such horns as said flower horn of said Hawthorne advertisement, [184] notwithstanding the fact that such flower horns had been on the market on the Pacific Coast for more than 8 years when said suit against Sherman Clay & Company came on for trial. A gentleman by the name of Mr. Locke and his attorney called upon me and spoke to me with reference to said suit upon said Nielsen patent. I expressed to him my surprise at hearing of the suit, since such horns had been upon the market without any indication of litigation so far as I ever knew, for so many years.

PETER BACIGALUPI.

Subscribed and sworn to before me this 16th day of June, A. D. 1913.

[Seal]

J. D. BROWN,

Notary Public in and for the City and County of San Francisco, State of California. [185]

[Affidavit of Peter Bacigalupi, Jr.]

In the District Court of the United States, for the Northern District of California, Second Division.

SEARCHLIGHT HORN COMPANY,

Plaintiff,

vs.

BABSON BROTHERS, INCORPORATED,

Defendant.

SEARCHLIGHT HORN COMPANY,

Plaintiff,

vs.

PACIFIC PHONOGRAPH COMPANY,

Defendant.

State of California,

City and County of San Francisco,—ss.

Peter Bacigalupi, Jr., being duly sworn, deposes and says:

I am over the age of 21 years and reside in the City of San Francisco; I am a member of the firm of Peter Bacigalupi & Sons, doing business in phonographs and supplies therefor, etc., at 908 Market Street, San Francisco; I have been in the phonograph business ever since the year 1894, in and about the City of San Francisco.

I am familiar with the horns for phonographs, constructed of tapering strips of metal joined together at the edges, like the [186] horn known as the Edison straight horn, and similar horns; I was familiar with the Flower Horn, put upon the market by Hawthorne & Sheble Mfg. Co., in or about the year 1903 or 1904; the Hawthorne & Sheble Flower Horn was constructed of tapering strips of metal joined together at their edges and was like the Edison straight horns. To my knowledge, such horns have been upon the market for more than eight (8) years. I never heard of the Nielsen patent, upon which the two above entitled suits are brought, until the suit of the Searchlight Horn Company against Sherman Clay & Company came to trial in the lat-

ter part of 1912. Previous to the latter part of 1912, when said suit came to trial, I had never heard of any other suit being brought upon said patent, nor had I ever heard of any threat of any kind made with reference to said Nielsen patent, notwithstanding the fact that horns constructed as above described had been upon the market on the Pacific Coast for more than eight (8) years last past.

PETER BACIGALUPI, Jr.

Subscribed and sworn to before me this 16th day of June, A. D. 1913.

[Seal]

J. D. BROWN,

Notary Public in and for the City and County of San Francisco, State of California. [187]

[Affidavit of Lewis H. Abbott.]

In the District Court of the United States, for the Northern District of California, Second Division.

SEARCHLIGHT HORN COMPANY,

Plaintiff,

vs.

BABSON BROTHERS, INCORPORATED,

Defendant.

SEARCHLIGHT HORN COMPANY,

Plaintiff,

vs.

PACIFIC PHONOGRAPH COMPANY,

Defendant.

State of California,

City and County of San Francisco,—ss.

Lewis H. Abbott, being duly sworn, deposes and says:

I reside in Oakland, Alameda County, California. I am employed by the Pacific Phonograph Company, defendant herein. I have been employed by the Pacific Phonograph Company continuously since about June, 1910. I am the only one now present in San Francisco that has been in the employ of the Pacific Phonograph Company for so long a period of time. The President of the Pacific Phonograph Company, Mr. A. R. Pommer, is now absent from San Francisco.

I am familiar with the horn known as the Edison Straight Horn and with the construction thereof. I have been engaged in the Phonograph business since the beginning of the year 1909, [188] when I was engaged in such business at Seattle, Wash.

Before I entered the phonograph business I knew that horns made of tapering strips of metal joined together at their edges like the Edison Straight Horn and like horns made by the Tea Tray Company were on the market and had been on the market for some time. Before the present suit was brought against the Pacific Phonograph Company, the defendant herein, I had never heard of the Nielsen Patent, nor had I ever heard of any litigation of any kind threatened against such horns as the Edison Straight horn.

LEWIS H. ABBOTT.

Subscribed and sworn to before me this 16th day of June, A. D. 1913.

[Seal]

J. D. BROWN,

Notary Public in and for the City and County of San Francisco, State of California.

Recd. copy June 16, 1913.

J. H. MILLER,
Atty. for Plff.

[Endorsed]: Filed Jun. 16, 1913. W. B. Maling,
Clerk. By J. A. Schaertzer, Deputy Clerk. [189]

[Affidavit of James S. Baley.]

*In the District Court of the United States for the
Northern District of California, Second Division.*

SEARCHLIGHT HORN COMPANY,
Plaintiff,

vs.

BABSON BROTHERS, INCORPORATED,
Defendant.

SEARCHLIGHT HORN COMPANY,
Plaintiff,

vs.

PACIFIC PHONOGRAPH COMPANY,
Defendant.

State of California,
City and County of San Francisco,—ss.

James S. Baley, being duly sworn, deposes and says:

I reside at 1533 Spruce Street, Berkeley, Cal. I

am employed by Babson Brothers, Inc., as manager of their branch store at 65 Post Street, San Francisco. Babson Brothers, Inc., deal in phonographs and supplies therefor. About February 1, 1911, I entered the employ of Babson Brothers, Inc., in Chicago, Illinois, and continued in their employ at Chicago for about nine (9) months, when I came to San Francisco, and took charge of their branch store here, which was opened in November, 1910.

Prior to the beginning of this suit against Babson [190] Brothers, Inc., I had never heard of the Nielsen patent in suit. When I became connected with Babson Brothers, Inc., in Chicago, I became familiar with horns for phonographs, composed of tapering strips of metal, and with the Edison Straight and Signet Horns, such horns being then on the market. Prior to the beginning of this suit, against Babson Brothers, Inc., I had never heard of any threat of litigation with respect to such horns. I am the only one here in San Francisco, connected with Babson Brothers, Inc., that has a knowledge of the facts above set forth, extending as far back as February 1, 1911.

I am familiar with horns sold for use with talking machines. Exposed horns for talking machines are going out of use since talking machines inclosed in cabinets and provided with concealed sound amplifying means are coming generally into use. Of the exposed horns, I regard those made of wood as being superior to those made of metal, since the wooden horns reproduce the sounds of the phonograph record more clearly, and without the metallic sound given

forth from horns made of metal strips, secured together at their edges so as to form longitudinal ribs. It is for this reason that bell-shaped horns made of tapering strips of wood, joined together at their edges, are preferred to metal horns similarly constructed, notwithstanding the fact that the wooden horns are more expensive than the metal horns.

JAMES S. BAILEY.

Subscribed and sworn to before me this 17th day of June, A. D. 1913.

[Seal]

J. D. BROWN,

Notary Public in and for the City and County of San Francisco, State of California. [191]

Due service of the within affidavit by copy is hereby admitted this 19th day of June, 1913.

MILLER & WHITE,

Attorney for Plaintiff.

[Endorsed]: Filed Jun. 23, 1913. W. B. Maling, Clerk. By. J. A. Schaertzer, Deputy Clerk. [192]

At a stated term, to wit, the March term, A. D. 1913, of the District Court of the United States of America, in and for the Northern District of California, Second Division, held at the courtroom in the City and County of San Francisco, on Tuesday, the 24th day of June, in the year of our Lord one thousand nine hundred and thirteen. Present: The Honorable WILLIAM C. VAN FLEET, District Judge:

IN EQUITY—No. 18.

SEARCHLIGHT HORN COMPANY,

Plaintiff,

vs.

PACIFIC PHONOGRAPH COMPANY,

Defendant.

Order Granting Injunction.

The plaintiff's motion for an injunction *pendente lite* having come on to be heard this day before the court, John H. Miller, Esq., appearing as attorney for defendant, and Louis Hicks, Esq., as attorney for defendant, and the said motion having been argued by counsel for the respective parties, and the Court having heard and duly considered the same, and being fully advised in the premises,

IT IS ORDERED that the plaintiff's said motion for an injunction *pendente lite* be and the same is hereby granted upon the filing by plaintiff of a good and sufficient indemnity bond in the sum of One Thousand Dollars. [193]

*In the District Court of the United States for the
Northern District of California, Second Division.*

IN EQUITY—No. 18.

SEARCHLIGHT HORN COMPANY,

Plaintiff.

vs.

PACIFIC PHONOGRAPH COMPANY,

Defendant.

**Petition for Allowance of Appeal With
Supersedeas.**

The defendant above named, conceiving itself aggrieved by order heretofore made and entered in the above-entitled cause on the 24th day of June, 1913, wherein and whereby it was ordered, adjudged and decreed that the plaintiff's motion for preliminary injunction *pendente lite* be granted upon the filing of the plaintiff, of a good and sufficient indemnity bond in the sum of One Thousand (\$1,000.00) Dollars (which said bond was thereafter waived by stipulation of the parties, and under order of Court, for the consideration that the defendant herein should execute a bond for a stay of said preliminary injunction, which said bond for stay of said injunction has heretofore been given, approved and filed), does hereby appeal from the said decree of the United States Circuit Court of Appeals for the Ninth Judicial Circuit, for the reason specified in the Assignment of Errors filed herein and herewith.

And it prays that this appeal may be allowed; that a transcript of the records, papers and proceedings upon which said order was made, duly authenticated, be sent to the United States Circuit Court of Appeals for the Ninth Circuit, and that an order [194] be made fixing the amount of security which defendant shall give and furnish on said appeal, and that upon the giving of said security all proceedings in this Court with reference to said preliminary injunction shall be suspended and stayed until the determination of said appeal by said United States Circuit Court

of Appeals for the Ninth Circuit, and your petitioner will ever pray, etc.

H. C. SCHAERTZER,
D. HADSELL, and
LOUIS HICKS,
Attorneys for Defendant.

[Endorsed]: Filed July 1, 1913. W. B. Maling,
Clerk. [195]

*In the District Court of the United States for the
Northern District of California, Second Divi-
sion.*

IN EQUITY—No. 18.

SEARCHLIGHT HORN COMPANY,
Plaintiff,

vs.

PACIFIC PHONOGRAPH COMPANY,
Defendant.

Assignment of Errors.

The defendant in the above-entitled suit hereby makes and files the following assignment of errors, in support of its appeal from the order or decree granting a preliminary injunction in said suit, and entered in the office of the Clerk of this Court on the 24th day of June, 1913:

I.

The Court erred in granting said preliminary injunction.

II.

The Court erred in not holding that claims 1, 2 and 3 of the Nielsen patent in suit, No. 771,441, and each

of them, is void for lack of invention, in view of the prior art.

III.

The Court erred in not holding claims 1, 2 and 3 of the Nielsen patent in suit, No. 771,441 and each of them, is void, because anticipated by the patents, publications and uses of the prior art and by each of said patents, publications and uses of the prior art, adduced by said defendant.

IV.

The Court erred in not holding that claims 1 and 2 of the [196] Nielsen patent in suit and each of them is limited to longitudinal strips of metal provided at their edges with longitudinal, outwardly directed flanges.

V.

The Court erred in not holding that claim 3 is different from claims 1 and 2 and from each of said two claims of the Nielsen patent in suit No. 771,441.

VI.

The Court erred in holding that defendant had infringed the Nielsen patent in suit No. 771,441, and in not holding that defendant had not infringed any of the claims of said patent.

VII.

The Court erred in not holding that, in view of the prior art, the three claims of the said Nielsen patent, and each of them, is limited by strips provided at their edges with longitudinal outwardly directed flanges and that by reason of such limitation, said three claims and each of them were not infringed by defendant.

VIII.

The Court erred in not denying the motion for preliminary injunction upon the ground that plaintiff had been guilty of laches and neglect for such a period of time before the bringing of this suit and the making of said motion, that it was not entitled to an injunction or to any relief in a Court of Equity.

IX.

The Court erred in not holding that the horns of defendant, charged with infringement, were made and sold under the authority of the plaintiff, and that, therefore, defendant was not guilty of any infringement of said Nielsen patent. [197]

X.

The Court erred in not holding that there was no proof that the horns of defendant charged with infringement were not the horns put upon the market under the authority of the plaintiff, and that, therefore, there was no proof that defendant had infringed said Nielsen patent in suit.

XI.

The Court erred in not dismissing the Bill of Complaint of plaintiff upon the ground that it appeared that the bill is lacking altogether in equity.

WHEREFORE, defendant prays that said order

or decree granting a preliminary injunction be reversed.

H. C. SCHAERTZER and
D. HADSELL,

Solicitors for Defendant.

LOUIS HICKS,

Of Counsel for Defendant.

[Endorsed]: Filed July 1, 1913. W. B. Maling,
Clerk. [198]

*In the District Court of the United States for the
Northern District of California, Second Di-
vision.*

IN EQUITY—No. 18.

SEARCHLIGHT HORN COMPANY,

Plaintiff,

vs.

PACIFIC PHONOGRAPH COMPANY,

Defendant.

Order Allowing Appeal.

On the petition of defendant in the above-entitled cause and on the motion of attorneys for defendant, it is ordered that an appeal to the United States Circuit Court of Appeals for the Ninth Circuit from the order heretofore made and entered in this cause, granting a preliminary injunction, be and the same is hereby allowed and that a certified transcript of the records, papers and all proceedings hereto, be forthwith transmitted to the United States Circuit Court of Appeals.

IT IS ORDERED that the bond on appeal be and the same is hereby fixed at the sum of Three hundred (\$300.00) Dollars, as a bond for costs and damages on appeal;

AND WHEREAS, upon stipulation of the parties hereto, it was agreed that the said order granting said preliminary injunction shall be stayed pending the appeal from said order, upon the filing by defendant, of a bond in the penal sum of One thousand (\$1,000.00) Dollars which said bond has been filed accordingly and approved.

NOW, THEREFORE, IT IS HEREBY ORDERED that said bond shall act as a supersedeas bond so far as proceedings with reference to this preliminary injunction are concerned. [199]

IT IS FURTHER ORDERED that a citation shall be issued to the defendant accordingly.

Dated: July 2d, 1913.

WM. C. VAN FLEET,
Judge of the United States District Court, Second
Division, in and for the Northern District of
California.

[Endorsed]: Filed Jul. 2, 1913. W. B. Maling,
Clerk. By J. A. Schaertzer, Deputy Clerk. [200]

*In the District Court of the United States for the
Northern District of California, Second Di-
vision.*

IN EQUITY—No. 18.

SEARCHLIGHT HORN COMPANY,

Plaintiff,

vs.

PACIFIC PHONOGRAPH COMPANY,

Defendant.

Order Fixing Amount of Bond on Appeal.

Defendant, having this day filed its petition for leave to appeal from the order granting preliminary injunction made and entered in this cause to the United States Circuit Court of Appeals in and for the Ninth Judicial Circuit, together with an Assignment of Errors, within due time, and also praying that an order be made fixing the amount of security which defendant should give and furnish upon said appeal, and that upon the giving of said security all further proceedings in this court with reference to said preliminary injunction shall be suspended and stayed until the determination of said appeal by the said United States Circuit Court of Appeals in and for the Ninth Judicial Circuit, and said petition having been duly allowed.

NOW, THEREFORE, IT IS HEREBY ORDERED that upon the said defendant filing with the Clerk of this Court, a good and sufficient bond in the sum of Three Hundred (\$300.00) Dollars, to the effect that if the said defendant shall prosecute said

appeal to effect and answer all damages and costs, if said [201] defendant fails to make good said appeal, then the said obligation shall be void; otherwise, to remain in full force and effect; said bond to be approved by the Court; that all further proceedings in this court with reference to said preliminary injunction be and they are hereby suspended and stayed until the determination of said appeal by the United States Circuit Court of Appeals.

Dated: July 2nd, 1913.

WM. C. VAN FLEET,
Judge of the United States District Court, in and for
the Northern District of California, Second
Division.

[Endorsed]: Filed Jul. 2, 1913. W. B. Maling,
Clerk. By J. A. Schaertzer, Deputy Clerk. [202]

*In the District Court of the United States for the
Northern District of California, Second Di-
vision.*

IN EQUITY—No. 18.

SEARCHLIGHT HORN COMPANY,

Plaintiff,

vs.

PACIFIC PHONOGRAPH COMPANY,

Defendant,

Bond on Appeal.

KNOW ALL MEN BY THESE PRESENTS,
that we, the undersigned, Pacific Phonograph Com-
pany, a corporation, as principal, and the United

States Fidelity and Guaranty Company of Baltimore, a corporation, organized under the laws of the State of Maryland, having its principal place of business in the city of Baltimore, State of Maryland, and having paid up capital of not less than Two Million (\$2,000,000.00) Dollars, for the purpose of making, guarantying, and becoming surety on bonds and undertakings, and having complied with all the requirements of the laws of the State of California respecting such corporations, as surety are held and firmly bound unto Searchlight Horn Company, a corporation, in the full and just sum of Three Hundred (\$300.00) Dollars to be paid to the Searchlight Horn Company, a corporation, its attorneys, assigns and successors, to which payment, well and truly to be made, we bind ourselves, our assigns and successors jointly and severally, firmly by these presents. [203]

Sealed with our seals and dated this —— day of July in the year of our Lord, one thousand nine hundred thirteen.

WHEREAS, at a session of the United States District Court in and for the Northern District of California, Second Division thereof, in the above-entitled action, an order granting a preliminary injunction was rendered and entered in said action as against the defendant above named on or about the 24th day of June, 1913, and the said defendant, having obtained from said Court an order allowing an appeal to the United States Circuit Court of Appeals in and for the Ninth Judicial Circuit, to reverse said order of the aforesaid Court, and a citation directed to the

said above-named plaintiff is about to be issued citing and admonishing it to be and appear at the United States Circuit Court of Appeals for the Ninth Judicial Circuit to be held at San Francisco, State of California.

Now, the conditions of the above obligation are such that if the said defendant shall prosecute said appeal to effect and shall answer all damages and costs that may be awarded against it if it fails to make good this appeal, then the above obligation shall be void; otherwise it shall remain in full force and effect.

PACIFIC PHONOGRAPH COMPANY,

[Seal]

By A. R. POMMER,

Pres.

UNITED STATES FIDELITY & GUAR-
ANTY CO.

[Seal]

By B. P. OAKFORD,

Attorney in Fact.

JESSE W. WHITED,

Attorney in Fact. [204]

Approved:

WM. C. VAN FLEET.

[Endorsed]: Filed Jul. 2, 1913. W. B. Maling,
Clerk. By J. A. Schaertzer, Deputy Clerk. [205]

*In the District Court of the United States for the
Northern District of California, Second Di-
vision.*

SEARCHLIGHT HORN COMPANY,

Plaintiff,

vs.

PACIFIC PHONOGRAPH COMPANY,

Defendant.

Stipulation [as to Record and Hearing on Appeal].

WHEREAS, the plaintiff's notice of motion for preliminary injunction in the above-entitled action sets forth, among other things, that plaintiff in making its motion will rely upon "the judgment-roll, the petition for new trial the order denying the new trial and the horn exhibits in connection with action #15,326 in this court, entitled Searchlight Horn Company vs. Sherman Clay & Company; also the papers, pleadings in the suit in equity in this court of the Searchlight Horn Company against Sherman Clay & Company, #15,623, and the order granting a preliminary injunction itself in said actions"; and

WHEREAS, an appeal in the case #15,326 from the judgment therein is being taken to the Circuit Court of Appeals for the Ninth Circuit, and appeal of the case #15,623 from the order granting a preliminary injunction and the preliminary injunction is being taken to said Circuit Court of Appeals for the Ninth Circuit; and

WHEREAS, the records of both of said numbered actions will be in the Circuit Court of Appeals at the

time at which the appeal in this action will be heard;
and

WHEREAS, it is the desire of the parties hereto to make as small and inexpensive record on appeal as possible in this case,

NOW, THEREFORE, IT IS STIPULATED between them,

1. That said judgment-roll, in connection with action [206] #15,623 and the papers and pleadings, order granting preliminary injunction in the action #15,623 need not be made a part of the record on appeal in this action.

2. That upon the hearing of the appeal in this action said judgment-roll in action #15,326, and papers and pleadings and order granting preliminary injunction and the preliminary injunction in the action #15,623, as those shall appear in the records on appeal in said actions in the Circuit Court of Appeals of the Ninth Circuit, may be used by either party hereto on this appeal, and for the purpose of this appeal shall be considered as part of the record on appeal in this case.

LOUIS HICKS and
D. HADSELL,

Attorneys for Appellant and Defendant.

MILLER & WHITE,

Attorneys for Respondent and Plaintiff.

Aug. 15, 1913.

[Endorsed]: Filed Aug. 19, 1913. W. B. Maling,
Clerk. By J. A. Schaertzer, Deputy Clerk. [207]

*In the District Court of the United States for the
Northern District of California, Second Division.*

No. 18.

SEARCHLIGHT HORN COMPANY,

Plaintiff,

vs.

PACIFIC PHONOGRAPH COMPANY,

Defendant.

Order Allowing Withdrawal of Exhibits.

Good cause appearing therefor, it is ordered that Plaintiff's Exhibit "Edison Catalogue," Plaintiff's Exhibits No. 1, No. 2, No. 3, No. 4, No. 5 and Defendant's Exhibits, United States and Foreign Patents, be and hereby are allowed to be withdrawn from the files of the Court in this cause and transmitted by the Clerk of this Court to the United States Circuit Court of Appeals for the Ninth Circuit, as a part of the record upon appeal; said original exhibits to be returned to the files of this Court upon the determination of said appeal by said United States Circuit Court of Appeals.

WM. C. VAN FLEET,

United States District Judge.

[Endorsed]: Filed Aug. 29, 1913. W. B. Maling,
Clerk. By J. A. Schaertzer, Deputy Clerk. [208]

**[Certificate of Clerk U. S. District Court to
Transcript of Record.]**

*In the District Court of the United States for the
Northern District of California, Second Division.*

No. 18.

SEARCHLIGHT HORN COMPANY,

Plaintiff,

vs.

PACIFIC PHONOGRAPH COMPANY,

Defendant.

I, Walter B. Maling, Clerk of the District Court of the United States, for the Northern District of California, do hereby certify the foregoing two hundred and eight pages, numbered from 1 to 208, inclusive, to be a full, true and correct copy of the record and proceedings in the above-entitled cause, excepting therefrom the following original exhibits, viz.: Plaintiff's Exhibit "Edison Catalogue," Plaintiff's Exhibits No. 1, 2, 3, 4 and 5, and Defendant's Exhibits, "United States and Foreign Patents" (which by order of Court are allowed to be withdrawn and transmitted herewith as a part of this record), and that the same constitute the record on appeal to the United States Circuit Court of Appeals for the Ninth Circuit.

I further certify that the cost of the foregoing Transcript of Record on appeal is \$124.00; that the said amount was paid by Louis Hicks, counsel for de-

fendant, and that the original citation issued in said cause is hereto annexed.

In testimony whereof, I have hereunto set my hand, and affixed the seal of said District Court, this 29th day of August, A. D. 1913.

[Seal] WALTER B. MALING,
Clerk of the District Court of the United States,
Northern District of California.

By J. A. Schaertzer,
Deputy Clerk. [209]

No. 2314

6

United States
Circuit Court of Appeals

For the Ninth Circuit.

Transcript of Record.
(IN TWO VOLUMES)

PACIFIC PHONOGRAPH COMPANY, a Corpora-
tion,

Appellant,

vs.

SEARCHLIGHT HORN COMPANY, a Corpora-
tion,

Appellee.

VOLUME II.
(Pages 226 to 407, Inclusive.)

Upon Appeal from the United States District Court
for the Northern District of California,
Second Division.

FILMER BROS. CO. PRINT, 330 JACKSON ST., S. F., CAL.

FILED

SEP 26 1913

No. 2314

United States
Circuit Court of Appeals

For the Ninth Circuit.

Transcript of Record.
(IN TWO VOLUMES)

PACIFIC PHONOGRAPH COMPANY, a Corpora-
tion,

Appellant,

vs.

SEARCHLIGHT HORN COMPANY, a Corpora-
tion,

Appellee.

VOLUME II.
(Pages 226 to 407, Inclusive.)

Upon Appeal from the United States District Court
for the Northern District of California,
Second Division.

*In the District Court of the United States for the
Northern District of California, Second Division.*

IN EQUITY—No. 18.

SEARCHLIGHT HORN COMPANY,

Plaintiff,

vs.

PACIFIC PHONOGRAPH COMPANY,

Defendant.

Citation [on Appeal (Original)].

The President of the United States to Searchlight Horn Company, a Corporation, Plaintiff, and Messrs. Miller & White, Its Attorneys, Greeting.

You are hereby cited and admonished to be and appear at the United States Circuit Court of Appeals for the Ninth Judicial Circuit, to be held at the city of San Francisco, State of California, on the 2d day of August, 1913, pursuant to an order allowing an appeal entered in the clerk's office of the United States District Court in and for the Northern District of California, in that certain action numbered "In Equity, No. 18," in which Searchlight Horn Company, a corporation, is plaintiff and in which Pacific Phonograph Company, a corporation, is defendant, to show cause, if any there be, why the order granting preliminary injunction, heretofore entered in this cause in said United States District Court should not be corrected, reversed and annulled and why speedy justice should not be done to the parties affected in that behalf. [210]

WITNESS the Honorable EDWARD D. WHITE, Chief Justice of the Supreme Court of the United States of America this 2d day of July and of the Independence of the United States, the one hundred twenty-seventh.

WM. C. VAN FLEET,
Judge of the United States District Court. [211]

Due service of the within Citation by copy is hereby admitted this 2d day of July, 1913.

MILLER & WHITE,
Attorney for Plaintiff.

[Endorsed]: No. 18. In Equity. In the District Court of the United States for the Northern District of California, Second Division. Searchlight Horn Company, Plaintiff, vs. Pacific Phonograph Company, Defendant. Citation. Filed Jul. 3, 1913. W. B. Maling, Clerk. By J. A. Schaertzer, Deputy Clerk. [212]

[Endorsed]: No. 2314. United States Circuit Court of Appeals for the Ninth Circuit. Pacific Phonograph Company, a Corporation, Appellant, vs. Searchlight Horn Company, a Corporation, Appellee. Transcript of Record. Upon Appeal from the United States District Court for the Northern District of California, Second Division.

Received and filed August 30, 1913.

FRANK D. MONCKTON,
Clerk of the United States Circuit Court of Appeals
for the Ninth Circuit.

By Meredith Sawyer,
Deputy Clerk.

*In the United States Circuit Court of Appeals for the
Ninth Circuit.*

PACIFIC PHONOGRAPH COMPANY,
Appellant,

vs.

SEARCHLIGHT HORN COMPANY,
Appellee.

**Order Extending Time to File Record and to Docket
Cause.**

Good cause appearing therefor, it is ordered that the appellant in the above-entitled cause may have to and including the 1st day of September, within which to file its record on appeal and to docket the cause in the United States Circuit Court of Appeals for the Ninth Circuit.

Dated August 1, 1913.

WM. W. MORROW,
United States Circuit Judge.

[Endorsed]: No. 2314. United States Circuit Court of Appeals for the Ninth Circuit. Order Under Rule 16 Enlarging Time to ——— to File Record Thereof and to Docket Case. Filed Jul. 31, 1913. F. D. Monckton, Clerk. Refiled Aug. 30, 1913. F. D. Monckton, Clerk.

**U. S. District Court,
Northern Dist. of Cal.
Second Division.**

Eq. No. 18.

8.

SEARCHLIGHT HORN COMPANY,
Plaintiff,
vs.

PACIFIC PHONOGRAPH COMPANY,
Defendant.

Eq. No. 7.

SEARCHLIGHT HORN COMPANY,
Plaintiff,
vs.

BABSON BROS., INC.,
Defendant.

**Defendant's Exhibits, United States and Foreign Patents,
Opposing Motions for Preliminary Injunction.**

HENRY C. SCHAERTZER,
Solicitor for Defendant, Humboldt Bank Bldg., San
Francisco, Cal.

LOUIS HICKS,
Of Counsel for Defendant.

[Endorsed]: Filed Jun. 16, 1913. W. B. Maling, Clerk. By J. A. Schaertzer, Deputy Clerk.

No. 2314. U. S. Circuit Court of Appeals for the Ninth Circuit. Defendant's Exhibits U. S. and Foreign Patents Opposing Motions for Preliminary Injunction. Received Sep. 2, 1913. F. D. Monckton, Clerk.

DESIGN.

231

F. S. SHIRLEY.

GLASSWARE.

No. 8,824.

Patented Dec. 7, 1875.



Witnesses:
J. B. Bond
J. Clark

Inventor:
Frederick S. Shirley
By *Wm. H. H. H.*
His Attys.

UNITED STATES PATENT OFFICE.

FREDERICK S. SHIRLEY, OF NEW BEDFORD, MASSACHUSETTS.

DESIGN FOR GLASSWARE.

Specification forming part of Design No. 8,824, dated December 7, 1875; application filed November 24, 1875.

[Term of Patent 3½ years.]

To all whom it may concern:

Be it known that I, FREDERICK S. SHIRLEY, of New Bedford, Bristol county, in the State of Massachusetts, have invented a Design for Glass-Vase Bodies, of which the following is a specification:

The nature of my design is fully shown in the accompanying photographic illustration, to which reference is made.

A is the glass-vase body, made of an elongated bell shape, or like a flaring cone, and finished at its mouth or upper edge with flaring curved lips or scallops, as shown at *a*. The exterior surface of this vase-body is ground off to produce a lusterless appearance. B B are ribs, which extend from the line of the base up along the exterior surface of the vase body to the upper edge or mouth, terminating there, one at the center of each of the flaring lips or scallops. These ribs are nicked or serrated throughout their entire length, and are highly polished.

This glass-vase body is intended to be mounted on a standard or base of metal or other material.

I prefer to use clear or colorless glass for the body, but either the surface of the vase or the ribs, or both, may be colored; but I do not consider the coloring to be an essential element in my design.

I am aware that glass vases having a bell or cone shape, and with flaring scalloped lips and longitudinal ribs, are not new, and I do not claim them. The distinctive character of my design is found in serrated and highly-polished ribs extending the length of the vase-body, the surface of which is ground off or lusterless.

What I claim as my invention is—

The design for a glass-vase body, in which serrated and highly-polished ribs extend longitudinally along the ground or lusterless surface of the body, substantially in the manner described.

FREDERICK S. SHIRLEY.

Witnesses:

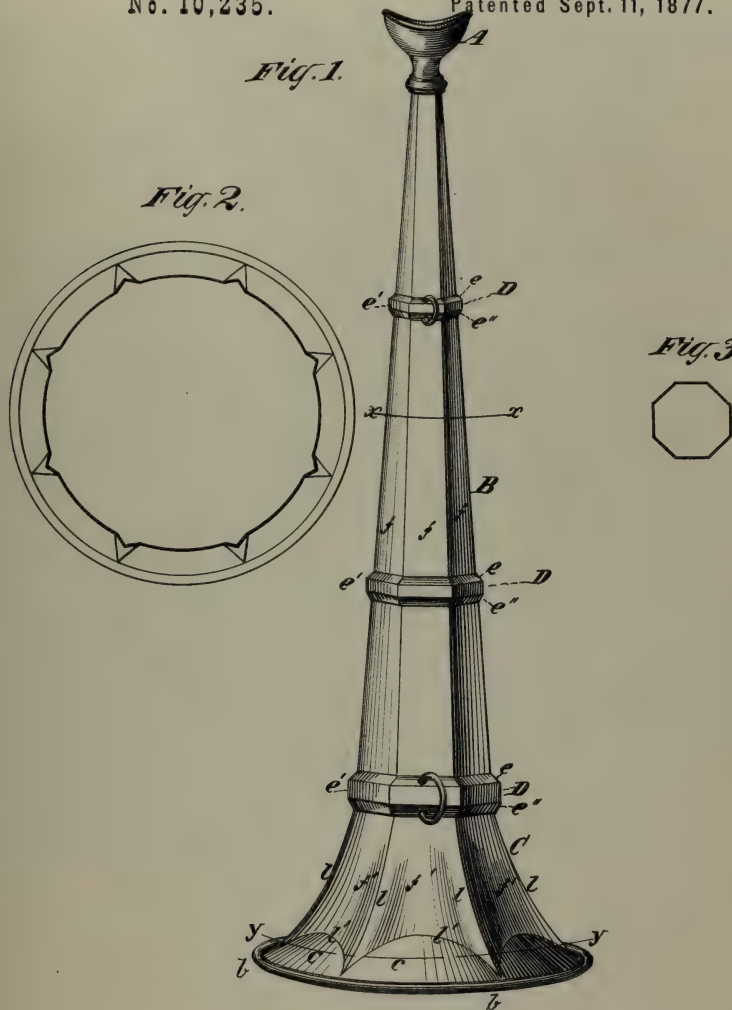
WENDELL H. COBB,
GEORGE F. TUCKER.

DESIGN.

E. CAIRNS.
SPEAKING-TRUMPETS.

No. 10,235.

Patented Sept. 11, 1877.

*Fig. 1.**Fig. 2.**Fig. 3.**Witnesses*

John Becker
Fred. Haynes

Edward Cairns
by his Attorneys
Brown & Allen

UNITED STATES PATENT OFFICE.

EDWARD CAIRNS, OF MORRISTOWN, NEW JERSEY.

DESIGN FOR SPEAKING-TRUMPETS.

Specification forming part of Design No. **10,233**, dated September 11, 1877; application filed August 24, 1877.
[Term of Patent 7 years.]

To all whom it may concern:

Be it known that I, EDWARD CAIRNS, of Morristown, in the county of Morris and the State of New Jersey, have originated and designed a Design for Speaking-Trumpets, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, making part of this specification.

Figure 1 in the drawing represents a perspective view of a speaking-trumpet embodying my design.

A represents the mouth-piece, B the tube, and C the bell, of the trumpet. The tube B has the form of a truncated polygonal pyramid, extending from the bell C to the mouth-piece A, and presents upon its outer surface the equal and geometrically-similar facets *f*, arranged in such manner that a cross-section made in any part of said tube at right angles with its central longitudinal axis will be a regular equilateral polygon, as shown in Fig. 2.

The bell C is, in form, partly pyramidal and partly conical. The flaring polygonal part comprises external curved facets *f'*. Said facets *f'* are extensions of the facets *f*, and their lines of junction *l* extend to and termi-

nate at the bead *b* at the outer margin of said bell. Said facets *f'* are, moreover, slightly concave on their outer surfaces, from which conformation their lines of intersection *l'* with the round flaring part *c c c* of the said bell are marked curves, giving the entire border of the flaring polygonal part where it joins the said round flaring part a scalloped form. A cross-section through the said conical and pyramidal parts of the bell gives the figure shown in Fig. 3. Upon the tube B are formed or attached at intervals polygonal bands D, having three sets of flat facets, *e e' e''*, so arranged that a cross-section of any of said bands made at right angles with any of said facets will give the figure of a trapezoid the not parallel sides of which are equal.

I claim—

The design for a speaking-trumpet consisting of the polygonally-formed tube B, the combined pyramidal and conical bell C, and the faceted bands D, as herein shown and described.

EDWD. CAIRNS.

Witnesses:

FRED. HAYNES,
BENJAMIN W. HOFFMAN.

DESIGN.

No. 34,907.

Patented Aug. 6, 1901.

C. McVEETY & J. F. FORD.

SHIP'S VENTILATOR.

(Application filed July 10, 1901.)

FIG. 1.

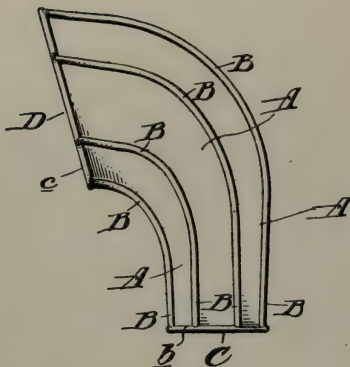


FIG. 2.

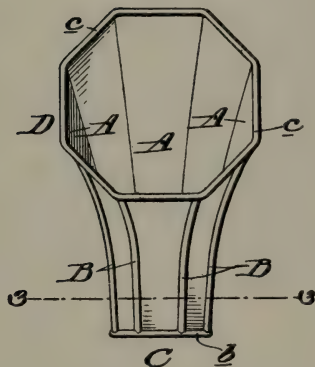
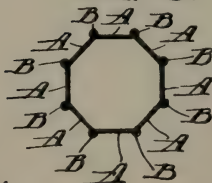


FIG. 3.



WITNESSES:

Boroman J. Stirling
Richard H. Sharp

INVENTORS:

Charles McVeety
John F. Ford
By their attorney
Walter W. Calhoun

UNITED STATES PATENT OFFICE.

CHARLES McVEETY AND JOHN F. FORD, OF PHILADELPHIA, PENNSYLVANIA.

DESIGN FOR A SHIP'S VENTILATOR.

SPECIFICATION forming part of **Design No. 34,907**, dated **August 6, 1901**.

Application filed July 10, 1901. Serial No. 67,794. Term of patent 14 years.

To all whom it may concern:

Be it known that we, CHARLES McVEETY and JOHN F. FORD, citizens of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented and produced a new and original Design for Ships' Ventilators, of which the following is a specification.

Referring to the accompanying drawings, forming part of this specification, Figure 1 illustrates a side elevation of a ventilator, showing our new design. Fig. 2 represents a front elevation of the same, and Fig. 3 shows a horizontal section taken on line 3 3 of Fig. 2.

As shown in the drawings, the leading or material feature of our design consist of a series of plates A flat in cross-section, as shown in Fig. 3. The plates have arranged at the point of junction ribs B, and at the base C and mouth D are arranged ribs b and c, which intersect the ribs B.

The general contour of the ventilator is that of a curved tapering figure in the form of a cornucopia, being octagonal in cross-section and having convex ribs at the base and 25 mouth, and similar ribs at the intersection of the plates, forming the walls of the ventilator.

Having described our invention, what we claim as new, and desire to secure by Letters 30 Patent, is—

The design for a ventilator substantially as herein shown and described.

In testimony whereof we affix our signatures in presence of two witnesses.

CHARLES McVEETY.
JOHN F. FORD.

Witnesses:

D. P. S. GARWOOD,
H. E. COUGHLIN.

Impr'd Bell

PATENTED

DEC 17 1867

72422

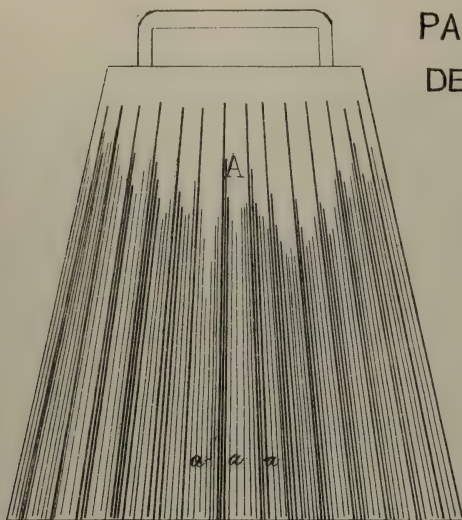


Figure 1.

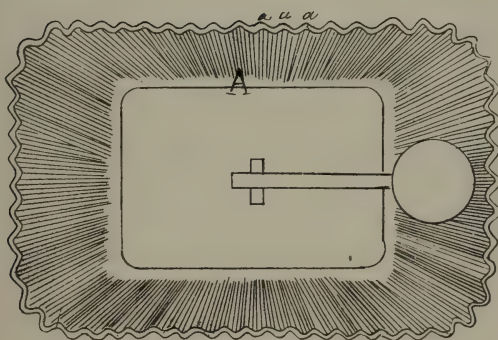


Figure 2.

Witnesses

J. C. White

J. C. des Granges

Inventor.

G. S. Saxton

By his Atty.

W. Randolph & Co.

United States Patent Office.

GEORGE S. SAXTON, OF ST. LOUIS, MISSOURI.

Letters Patent No. 72,422, dated December 17, 1867.

IMPROVEMENT IN MANUFACTURE OF CORRUGATED BELLS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, GEORGE S. SAXTON, of the city and county of St. Louis, and State of Missouri, have invented a new and useful Improvement in Bells; and I do hereby declare that the following is a full and clear description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

This invention relates to an improvement in bells by corrugating the lower portion of their sides or bodies; the object of which improvement is twofold in its nature: Firstly, it is for the purpose of increasing the tinnabulary quality of the bell, and the volume of the sound issued therefrom; and, secondly, it is for the purpose of constructing small bells of sheet metal, and of one single piece, the corrugations of the sides of the bell taking up the excess of the metal toward the base, and thus rendering it possible to form a perfect pressed bell of one single piece.

To enable those skilled in the art to make and use my improved bell, I will proceed to describe its construction and operation.

Figure 1 of the drawings is a side elevation of one of the improved bells.

Figure 2 is a bottom plan of the same.

The general form of the bell A may be in any pattern that is best adapted to the purposes for which it is intended. The only feature in which it differs from all other bells is in the corrugations *a*, which commence in large folds near or at the bottom of the bell, and, as they rise, gradually diminish toward the top, at which place they entirely vanish. These folds or corrugations *a* increase the lower or vibratory portion of the bell to such an extent as to very perceptibly increase the volume of sound produced by its agitation. The chief object of the improvement, however, is to form the bell in such a manner that it may be constructed by pressing, with suitable dies, a single sheet of metal into the proper form. This of course is confined to small bells, and the result is to produce a better bell at a cheaper price. The depth of the bell of course precludes the idea of pressing a bell into the proper form without taking up the excess of metal in this manner.

Having described my invention, I claim as a new article of manufacture—

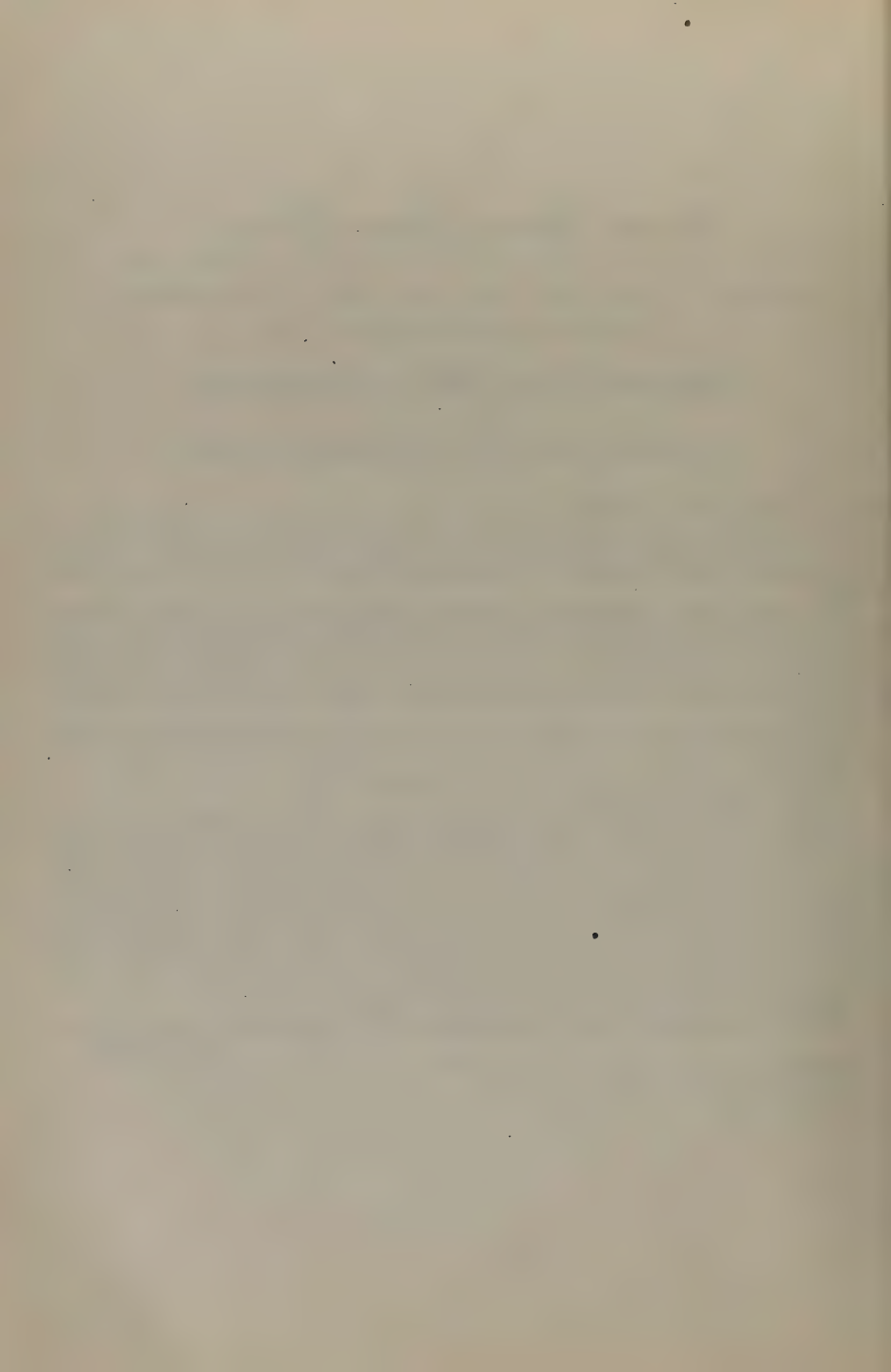
The bell A, when it is formed in corrugations, substantially in the manner and for the purpose set forth.

GEO. S. SAXTON.

Witnesses:

M. RANDOLPH,

T. E. WHITE.



W. H. BARNARD.
Lamp-Chimney.

No. 165,912.

Patented July 27, 1875.

FIG. I.

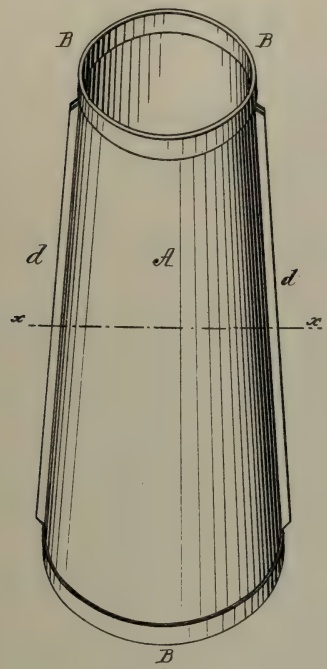


FIG. III.

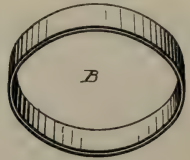


FIG. II.

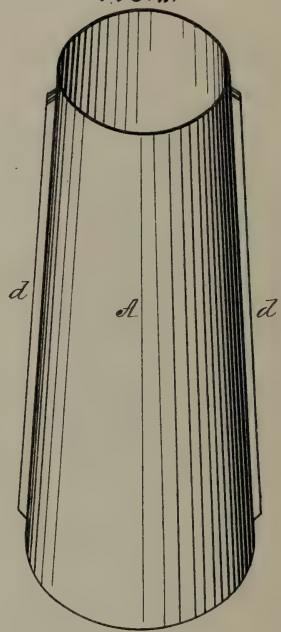


FIG. V.

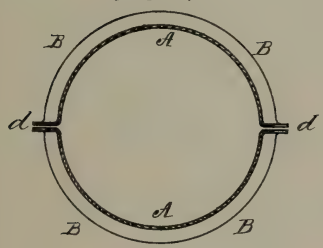
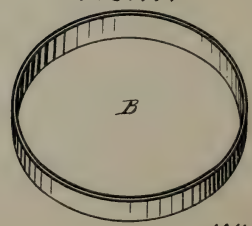


FIG. IV.



WITNESSES:

J. S. Coombs
W. C. Norris

INVENTOR

William H. Barnard

By James L. Norris

Atty.

UNITED STATES PATENT OFFICE.

WILLIAM H. BARNARD, OF SEDALIA, MISSOURI.

IMPROVEMENT IN LAMP-CHIMNEYS.

Specification forming part of Letters Patent No. **165,912**, dated July 27, 1875; application filed January 4, 1875.

To all whom it may concern:

Be it known that I, WILLIAM H. BARNARD, of Sedalia, in the county of Pettis and State of Missouri, have invented certain new and useful Improvements in Lamp-Chimneys, of which the following is a specification:

My invention relates to certain improvements in that class of lamp-chimneys which are constructed of two longitudinal sections, united at their edges, and properly bound or clasped together, for the purpose of allowing for the expansion and contraction of the glass when subjected to sudden changes of temperature, and preventing the chimney from cracking or breaking.

The object of my invention is to secure a more perfect joint at the point of union of the two sections, and provide a more secure and reliable device for binding the two sections together, than has been heretofore accomplished in the chimneys of this class, as ordinarily constructed; and my invention consists in constructing a chimney of two longitudinal sections or parts, as usual, each section having a longitudinal flange on its edges, which unite and form a longitudinal projection or edge on the outside of the chimney when the sections are bound together.

By this construction a broad face is obtained along the edges of each section, which form, when properly ground and placed together, a perfect joint.

In the drawings, Figure 1 is a perspective view of my improved lamp-chimney; Fig. 2, a similar view of the same with the end ferrules removed. Figs. 3 and 4 are detached views of the top and bottom ferrules, respectively; and Fig. 5 is a section on line *xx* of Fig. 1.

The letters A A represent the sections composing the chimney. Along the edges of each section, on the outside, a longitudinal flange, *d*, is formed. The faces of these flanges

are accurately ground, so as to form a perfectly tight joint when the sections are joined together. The flanges do not extend quite to the end of the sections, but terminate a short distance from said ends, in order to allow the sections to set into the annular ferrules which bind them together. These annular ferrules are represented by the letters B B. They are constructed so as to grasp the edges of the sections at their ends, both on the inside and outside, and thus firmly bind them together.

It will be seen that by the above-described construction of the sections a broad face will be formed along the edges of the sections at the point of union, which will allow said edges to be readily and accurately ground, forming a perfect joint throughout the entire length of the sections, which it has hitherto been found impossible to obtain.

The annular ferrules, by grasping both the outside and inside of the chimney, will prevent any slipping of the sections, and thus necessarily bind them in place.

The chimneys thus constructed are admirably adapted for packing for transportation, as the sections will nest together, occupying but little room.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

A lamp-chimney constructed of two sections, each of which is provided with laterally-projecting flanges, substantially as described, whereby, when the sections are placed together, a longitudinal projection is formed and a perfect joint secured, as set forth.

In testimony that I claim the foregoing I have hereunto set my hand and seal.

WILLIAM H. BARNARD. [L. S.]

Witnesses:

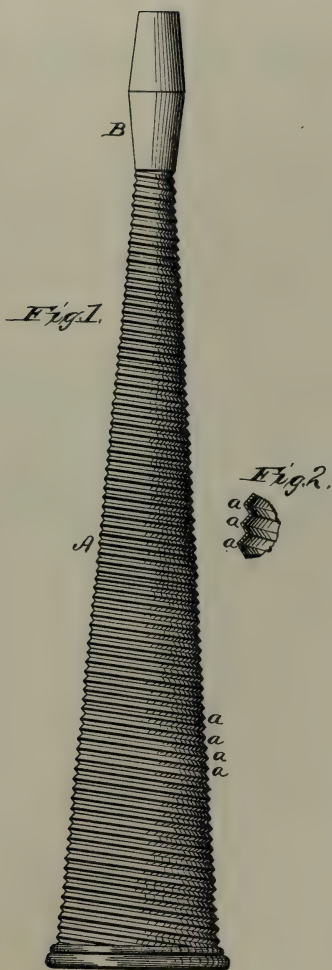
J. HALL BROWNE,
J. S. JACKSON.

C. W. FALLOWS.

TOY BLOW HORN.

No. 181,159.

Patented Aug. 15, 1876.



WITNESSES

Francis L. Outland
C. L. Erick

INVENTOR

Chas W. Fallows

By Alexander H. Mason
Attorneys

UNITED STATES PATENT OFFICE.

CHARLES W. FALLOWS, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN TOY BLOW-HORNS.

Specification forming part of Letters Patent No. **181,159**, dated August 15, 1876; application filed June 27, 1876.

To all whom it may concern:

Be it known that I, CHARLES W. FALLOWS, of Philadelphia, in the county of Philadelphia, and in the State of Pennsylvania, have invented certain new and useful Improvements in Sheet-Metal Blow-Horns; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

The nature of my invention consists in the construction of a blow-horn, as hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to manufacture and use the same, I will now proceed to more fully describe the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 represents a side elevation of my blow-horn, and Fig. 2 represents a small section of the body.

The body A of the horn is made of corrugated sheet metal, in the usual tapering form, and is provided with a mouth-piece, B, having the usual reed. The metal which forms the body is cut in proper shape, and then passed between rollers or dies and crimped or corrugated. These corrugations are preferably

made on an incline, so that when the blank sheet is bent into tubular shape the corrugations *a a* will be on a short spiral, as shown in the drawings.

It is well known that the thinner the metal of which such horns are made the sharper the tone; but in cases where the horns are plain or smooth, and made of light metal, they do not have the requisite strength or keep proper shape, and in a short period would not be merchantable or present a neat appearance.

I claim for my invention that lighter and cheaper metal can be used, and that the same is more easily worked into proper shape by being light, that it costs less in construction, and that the sound made by the mouth-piece and reed is sharper than in the usual blow-horn made of plain or smooth metal.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

A blow-horn made of corrugated sheet metal, for the purposes herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 14th day of June, 1876.

CHARLES W. FALLOWS.

Witnesses:

JAMES FALLOWS,
ANSON EATON.

(No Model.)

C. R. PENFIELD.

METALLIC BARREL.

No. 362,107.

Patented May 3, 1887.

Fig. 1.

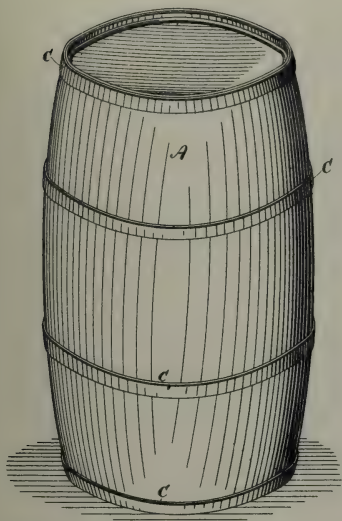


Fig. 2.

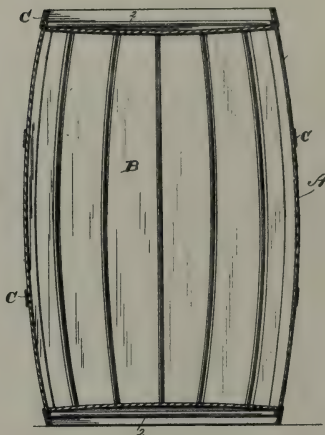


Fig. 13.



Fig. 3.

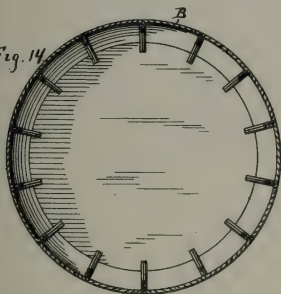


Fig. 14.



Fig. 15.



Fig. 4.



Fig. 5.

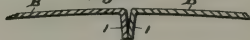


Fig. 6.



Fig. 7.

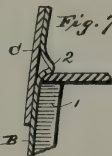


Fig. 8.

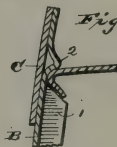


Fig. 9.

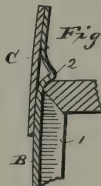


Fig. 10.

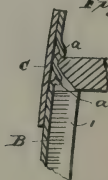


Fig. 11.



Fig. 12.



Witnesses.

Chas. R. Burr.

A. Stewart.

Inventor.

Charles R. Penfield
by Chas. R. Burr
his Attorneys.

UNITED STATES PATENT OFFICE.

CHARLES R. PENFIELD, OF ROCHESTER, NEW YORK.

METALLIC BARREL.

SPECIFICATION forming part of Letters Patent No. 362,107, dated May 3, 1887.

Application filed September 2, 1886. Serial No. 212,510. (No model.)

To all whom it may concern:

Be it known that I, CHARLES R. PENFIELD, of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Metallic Barrels; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the figures and letters of reference marked thereon.

My invention has for its object to provide a packing and storing barrel constructed of metal that shall resemble in appearance the ordinary wooden barrel, but shall be much stronger, lighter, and altogether more desirable for use, whether used as a receptacle for liquids or as a dry or "slack" barrel; and it consists of a barrel constructed of metallic staves fashioned somewhat after the manner of wooden staves and fastened together, preferably, by hoops, or which may be soldered, or hooped and galvanized, if desired; and it further consists in certain novelties of construction and combinations of parts, which will be herein-
after fully described, and pointed out in the claims at the end of this specification.

In the drawings, Figure 1 is a view of a barrel constructed in accordance with my invention; Fig. 2, a longitudinal and Fig. 3 a cross section of the same. Fig. 4 is a perspective view of one of the staves; Figs. 5 and 6, views of the joints between the edges of the staves; Figs. 7, 8, 9, 10, and 11, views of modifications of the croze and means of fastening the heads therein, and Fig. 12 a view of the stave-blank. Figs. 13, 14, and 15 are views exhibiting various means of strengthening the chine.

Similar letters of reference in the several figures indicate the same parts.

A represents a barrel constructed in accordance with my invention, resembling, as far as outside appearance is concerned, an ordinary wooden barrel, constructed of the staves B, and fastened together by means of hoops C, as ordinarily.

The staves B are made from a blank of sheet metal, preferably steel, such as shown in Fig. 12, with the side flanges, 1 1, being forced by powerful pressure into the shape shown in Fig. 4—that is, they are bent transversely to give

the requisite amount of bilge, and then are given a slight longitudinal bending, so as to strengthen them sufficiently, and also to give the barrel which they are to form the proper rotundity. At the same or another operation the side flanges, 1 1, are bent up to nearly right angles with the body of the staves. Corrugations or ribs 2 2 are next formed near the ends of the blank, a short distance beyond the ends of the side flanges, and this space between the corrugations and the ends of the flanges forms the croze, as will be further on explained. These bending operations, though described *seriatim*, are, it will be understood, to be performed by one operation by some powerful pressing device—such, for instance, as a hydraulic press—suitable dies of course being employed to accomplish the purpose. The stave thus constructed, it will be seen, is very stout, and by reason of the several arches and projecting flanges is able to stand any amount of hard usage without losing its shape.

Now, in order to form a barrel from the above staves it is only necessary to set them up with the flanges 2 2 in contact with those of the next stave, and then to place the hoops on and drive them to their proper positions, after the manner of making ordinary wooden barrels.

As the flanges at the side of the staves have a broad bearing upon each other, they are effectually prevented from slipping by, and will therefore act in the same manner as ordinary wood staves. If desired, instead of having the flanges come close together, as shown, they may be bent slightly either inward or outward, as shown in Figs. 5 and 6—in the latter case to give elasticity to the barrel or to permit of applying some sealing material to the cracks thus formed, or in the former case to permit of sealing or galvanizing on the inside and permitting the galvanizing material to fill the crevice formed therein.

The manner of forming the croze and attaching the head may be varied in many ways, as may also the construction of the head. For instance, a plain metal head without flanges (such as shown in Fig. 7) might be employed, in this case the edge of the metal disk being confined between the corrugation and the ends of the flanges 1 1, the ordinary hoop being ap-

plied to the outside of the staves, pressing them inward and strengthening the chine, as shown; or, if desired, a concavo-convex head might be employed having a flange around it, as shown in Fig. 8, adapted to be confined in a manner similar to the device shown in Fig. 7, but having the projecting flange turned down.

In Fig. 9 I have shown the tops of the flanges on the staves inclined, forming the under side of the croze inclined and a wooden head applied thereto, and this device may be used in connection with a head composed partly of wood and partly of metal, *xx*, the two side pieces of metal being provided with flanges *yy*, projecting beneath the wooden piece *z*, as shown in Fig. 11, and they may be provided with upwardly or downwardly projecting flanges adapted to fit the croze.

In Fig. 10 I have shown a double corrugation or two ribs, *aa*, on the end of the stave, the groove between them constituting the croze, and this construction I regard as a particularly good one, because it relieves the ends of the longitudinal flanges *ll* of all pressure upon them.

Barrels constructed as above may be used for liquids, in which event, I propose to line them with some form of cement in order to make a tight joint between the staves, or to galvanize them, so as to render them non-corrosive, and also to fill the insides of the seams with the galvanizing material; or I also propose to use them for dry substances, in which case the barrel can be formed, in the usual manner, without the use of cement or galvanizing material, the hoops being relied upon to fasten the whole together, and when thus used one of the flanges *l* may, if desired, be dispensed with, a tight joint being made by one flange with the plain edge of the next stave.

The barrel as a whole is much stronger and lighter than the wooden barrels ordinarily in use, and is practically indestructible. The staves individually are much stronger by reason of the bracing and arching, and, furthermore, it can be used as a "knockdown" barrel when used for dry or semi-liquid materials, the spring in the metal flanges serving to preserve a practically-tight joint between the staves. There are no seams or corrugations on the outside of the barrel, and nothing to prevent its being rolled and manipulated after the manner of ordinary barrels.

The chine may be strengthened by a band of metal extending around the inside, if desired,

as shown in Fig. 13, or by employing an end hoop with an internally-projecting flange, as in Fig. 14, and the end of the staves may, if desired, be strengthened by forming a solid rib in lieu of the corrugation *ll* for forming the croze, as in Fig. 15.

Various modifications will at once suggest themselves to those skilled in the art, and therefore I do not desire to be confined to the exact construction herein shown.

I claim as new—

1. The herein-described barrel, consisting of the metallic staves having the corrugations at their ends and the flanges at the sides, and the hoop or hoops for securing them together, substantially as described.

2. The herein-described barrel, consisting of the metallic staves curved so as to form the bilge, having the corrugations at their ends and the flanges at the sides, and the hoops for securing them together, substantially as described.

3. The herein-described barrel-stave, constructed of sheet metal bent transversely so as to form the bilge, and having the inwardly-turned flange at the side and the corrugations or ribs at the ends, substantially as described.

4. The herein-described barrel-stave, constructed of sheet metal bent transversely so as to form the bilge, and having the inwardly-turned flanges on both sides thereof, and the corrugations or ribs at the ends, substantially as described.

5. The herein-described barrel-stave, constructed of sheet metal bent transversely so as to form the bilge, having the flanges at the sides and the corrugations at the ends forming a portion of the croze, substantially as described.

6. The herein-described barrel-stave, constructed of sheet metal, having the flanges at the sides, terminating a short distance from the ends, and the corrugations at the ends, cooperating with the ends of the flanges to form the croze, substantially as described.

7. The herein-described barrel, constructed of sheet-metal staves, bilged as shown, having the flanges at the sides, the corrugations at the ends, forming with the ends of the flanges the croze, the sheet-metal heads, and the hoops for securing the whole together, substantially as described.

CHARLES R. PENFIELD.

Witnesses:

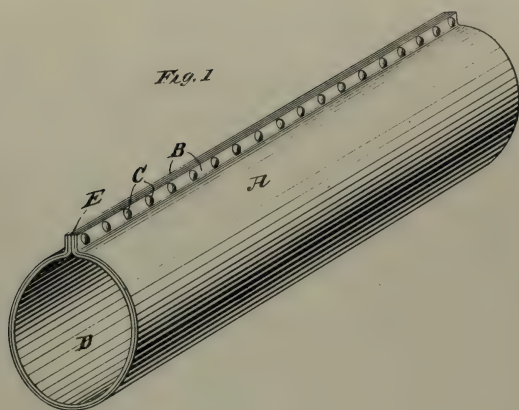
DE L. CRITTENDEN,
W. D. ARMATAGE.

(No Model.)

J. C. BAYLES.
PIPE OR TUBE.

No. 406,332.

Patented July 2, 1889.



Witnesses:

Raphael Netter
Robt. F. Gaylord

Jas. C. Bayles Inventor
by
Duncan Curtis & Page
Attorneys

UNITED STATES PATENT OFFICE.

JAMES C. BAYLES, OF NEW YORK, N. Y.

PIPE OR TUBE.

SPECIFICATION forming part of Letters Patent No. 406,332, dated July 2, 1839.

Application filed April 6, 1889. Serial No. 306,167. (No model.)

To all whom it may concern:

Be it known that I, JAMES C. BAYLES, of the city, county, and State of New York, have invented certain new and useful Improvements in Pipes or Tubes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

The present invention relates to the construction of pipes or tubes, and especially to that class of pipes that are adapted to conducting acidulous or other iron-destroying liquids. Thus in mining and similar operations it is found that much of the water that it is necessary to drain or draw off is more or less impregnated with sulphur or other elements that render it corrosive in its action upon metal pipes which usually are made of iron.

Heretofore it has been customary to a limited extent to use pipes made of wood or similarly non-corrosive material; but this kind of pipe is obviously impracticable in various respects. It is difficult to make, as well as expensive, especially in large sizes and in regions where there is little timber. It is cumbersome to handle and does not well serve where a water-tight pipe is needed.

It is therefore the object of the invention to produce a metal pipe which shall be capable of resisting the action of the iron-destroying fluids; and the invention consists of a pipe made up from sheet-iron and provided with a lining or sheathing of lead.

Referring to the drawings, Figure 1 shows a section of pipe embodying the invention and having but one seam. Figs. 2 to 5 are cross-sections of modified forms.

Referring to these views in detail, A represents the exterior or body part of the pipe. This body is composed of sheet-metal blanks, which is brought into cylindrical form by any suitable means, with outwardly-projecting flanges B along its longitudinal edges. These flanges are brought opposite each other and then secured together by the rivets C, or any other suitable form of connection—that is to say, bolts or screws may be used, or even any form of suitable clamp—and in the case of very thin metal the flanges may be made to clasp each other or lock together.

D is a lining of lead, which extends over

the entire inner surface of the metal body A. This lead lining will usually be of a thin gage, and before the seam parts of the iron body of the pipe are closed finally together the sheet of lead will be inserted in such body and worked down to conform to substantially the same form—that is, so as to lie closely on the inner surface of the sheet-iron. Of course the sheet-lead may be shaped with the body of the pipe when this is practicable, and still other ways of placing the lining within the body of the pipe and conforming it thereto will occur to those familiar with the art of pipe-making. This lead sheathing is to be flanged similarly to the blank of the body part, and the flanges E thus formed are to be brought together face to face and secured to and between the flanges B of the iron body. Thus the seam of the pipe as a whole consists of four thicknesses and forms a rib or wing extending outwardly from the surface of the pipe, which serves to stiffen and strengthen the pipe and exposes the junctional parts of the seam for easy manipulation in case of repair of leaks or ruptures.

It is essential in the construction of this pipe that the interior sheathing be secured between the flanges of the iron body. Not only is a tight seam readily formed, but the lining is held against collapsing or being forced away from the surface of the iron. Thus, as is well understood, the lead lining under the action of heat will expand and stretch, but it will not when subsequently cooled contract and return to its previous form, and the effects of long-continued expansion and contraction of the iron body of the pipe will tend to corrugate the lining and to force it away from contact with the inner face of the pipe, as well as to rupture it or cause it to collapse; but when the lining is attached to the body of the pipe the distortion of the lead lining is practically obviated, for the lining will be held against moving away from the iron. Where pipe of but a single seam is used, the pipe should be laid with the seam uppermost, so that the lining will be positively held up by the iron body, and not one by virtue of the strength of its own arch, for then the action of contraction and expansion, which would be most exerted in the arch, will have no serious or detrimental effect.

Fig. 2 shows a form of pipe having two seams, but in other respects it is the same as the pipe of Fig. 1. Fig. 3 is another similar form of pipe composed of three sections and having three seams.

It is expected that the most available form of pipe would be one having two or more seams, as the sections of such a pipe may be most conveniently bunched and shipped from the factory to the place of use, where the sections may be secured together in pipe form. So, too, with such pipe, the separate sections are so nearly flat that it is a simple matter to apply the lead linings to them, which may very readily be done at the time of assembling them into pipe form. The lead in thin sheets would have but to be laid in the sections and could be quickly shaped thereto by mallets or other simple hand-tools, and in case the run of water does not fill the pipe, or does so rarely, then only the lower or underneath section or sections need be lined.

In Fig. 4 I show the seams provided with re-enforce pieces F, which are angle-bars lying in the angles of the seams, and are employed where a strong pipe is needed and the rigidity and strength of the seam parts is a matter of importance. These re-enforce bars may be of any other suitable form, or they may be of a single piece instead of separate strips located upon opposite sides of the seam and adapted to inclose the seam parts.

Fig. 5 shows one form of flat-sided pipe, this particular form being square and having a seam along the middle line of its two opposite sides.

The invention may be embodied in yet other forms of pipe; but it is believed those shown serve to illustrate the principle of the invention and its application.

Although I have described this pipe as applied to the drainage of mines and similar works, it will be obvious that its utility is not limited thereto, and that it is applicable to the conduction of any kind of liquids and under any circumstances where such pipe would be effective.

What I claim as new is—

1. A pipe composed of a sheet-iron section shaped into cylindrical form with outwardly-projecting flanges along its opposite longitudinal edges, and a sheet-lead section similarly shaped and arranged within the sheet-iron section, with its flanges brought together face to face and secured to and between the flanges of the iron section.

2. A pipe composed of two or more sheet-iron sections, each shaped into the partial form of the pipe, with outwardly-projecting flanges at their longitudinal edges and provided with a sheet-lead lining, the sections being arranged in pipe form and their flanges secured together.

3. A pipe composed of sections of sheet-iron shaped longitudinally into pipe form and secured together along their longitudinal edges, and having a sheet-lead lining which is secured to the iron sections at their seams.

JAMES C. BAYLES.

Witnesses:

FRANK E. HARTLEY,
ERNEST HOPKINSON.

C. L. HART.
SHEET METAL PIPE.

No. 409,196.

Patented Aug. 20, 1889.



Fig. 1.

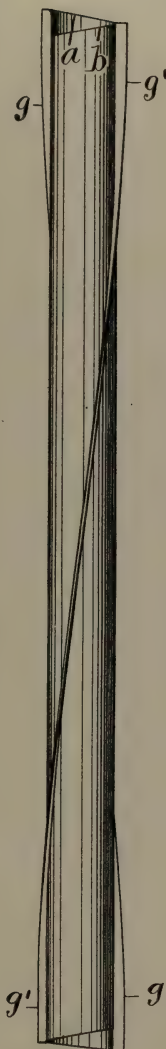
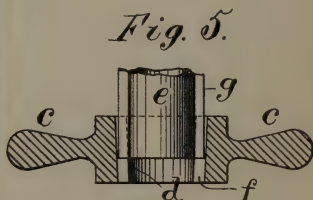
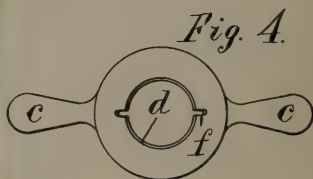
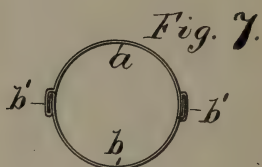
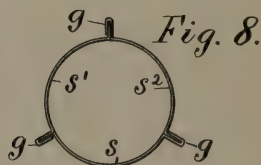
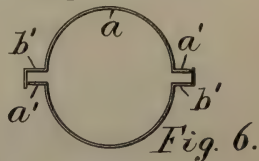


Fig. 2.



Fig. 3.



Attest:

L. Lee.
F. C. Fischer.

Inventor.

Charles L. Hart, per
Crane & Miller, attys.

UNITED STATES PATENT OFFICE.

CHARLES L. HART, OF BROOKLYN, NEW YORK.

SHEET-METAL PIPE.

SPECIFICATION forming part of Letters Patent No. 409,196, dated August 20, 1889.

Application filed December 19, 1888. Serial No. 294,134. (No model.)

To all whom it may concern:

Be it known that I, CHARLES L. HART, a citizen of the United States, residing at Brooklyn, Kings county, New York, have invented certain new and useful Improvements in Sheet-Metal Pipes, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention consists in a sheet-metal pipe formed in two or more longitudinal sections united by longitudinal twisted seams.

It also consists in certain modifications hereinafter fully set forth. When formed with standing spiral seams, the appearance of the pipe is not only novel and ornamental, but the standing spiral seams operate to brace and stiffen the pipe in a very remarkable degree.

In all the pipes heretofore manufactured with spiral seams the pipe has been constructed with a single spiral seam and formed by wrapping a blank transversely to the axis of the pipe and securing one edge of the blank upon the opposite edge of the same blank when lapped spirally thereon. Such a process may be continued indefinitely to form an endless pipe; but to form a pipe in such manner requires special machinery adapted to wind the blank and secure its overlapped edges together, and the object of my present invention is to avoid the expense of such special machinery in forming a pipe with a spiral seam. I effect such object by first forming the pipe of straight longitudinal sections of convenient length united by longitudinal seams and then twisting the whole when seamed together.

The straight longitudinal sections which are required to form a pipe with straight longitudinal seams may be readily shaped without expensive dies in the ordinary cornice-brake found in the shops of all large workers in sheet metal, and they may also be formed in suitable stamping or shaping presses by providing dies of suitable profile and pressing the sheet-metal blanks between them. The pipe may thus be made and seamed longitudinally with very little expense, and may then be twisted bodily to form the twisted seam thereon by merely grasping the two ends of the pipe and turning them in opposite directions.

The invention will be fully understood by reference to the annexed drawings, in which— 55

Figure 1 is a view of a pipe provided with straight longitudinal seams prior to the twisting operation, the view showing the edge of the standing seam *g*. Fig. 2 is a side view of the same pipe with standing seam *g* spirally twisted one-half a revolution in the length of the pipe. Fig. 3 is an edge view of the same pipe with one end of the pipe tapered and a portion of the standing seam removed and the other end flared and the standing seam flattened down. Fig. 4 is an end view of a die adapted to twist such pipe. Fig. 5 is a longitudinal section across the center of the same with one end *e* of the pipe fitted therein. Fig. 6 is an end view of the two sections of a pipe shaped ready for seaming. Fig. 7 is an end view of the same pipe with the seam closed and bent down upon the pipe, and Fig. 8 is an end view of a pipe formed in three longitudinal sections with three standing seams. Figs. 6, 7, and 8 are drawn upon a larger scale than the other figures. 60 65 70 75

In Fig. 6 the sections of the pipe are shaped each to embrace one-half its circumference, the sections *a* and *b* being provided each with a longitudinal radial flange *a'* at one edge and with a bent flange *b'* at the opposite edge. The sections are thus similar, and any number of similar sections may thus be used in forming the pipe. 80 85

Fig. 7 shows the sections united together with the flange *b'* closed over the flange *a* and both bent down over the pipe, as in double seaming.

In Fig. 8 the pipe is shown formed in three longitudinal sections *s*, *s'*, and *s''*, united by similar seams, but the seams *g* projecting radially from the pipe. 90

In Figs. 4 and 5 the die is shown provided with handles *c* and formed with a conical bore *d*, adapted to partially admit the end of the pipe *e*. Longitudinal grooves *f* are formed in the sides of the bore to admit the standing seams *g*. The pipe is made in the following manner: 95 100

Sheet-metal section-blanks of suitable length and width are prepared to form the required sections for one length of pipe, and each is shaped at its edges to form a seam in conjunction with the edges of the adjacent sections. The longitudinal seams are then 105

closed sufficiently to hold the sections together during the twisting operation, and the seams are, after the pipe is twisted, permanently closed to hold the sections in their twisted position.

It will be readily perceived by comparing Figs. 1 and 2 that the spiral seam in Fig. 2 is necessarily longer upon the same pipe than the straight seam in Fig. 1, and it will therefore be obvious that in the twisting operation one or more of the flanges a' must slide longitudinally upon certain of the flanges b' an amount corresponding to the difference in the length of the straight and spiral seams, and that the end of each section will assume an angle with the axis of the pipe, owing to the twisting of each section-blank around such axis. All the seams are not therefore rigidly closed prior to the twisting operation, as such closing would cause a great resistance to such sliding movement of the flanges, but part only of the seams, as the seam g' in Fig. 2, are closed rigidly before the pipe is twisted to hold the sections firmly in their twisted position.

It will be noticed in Fig. 2 that the ends of the blanks a and b coincide upon the closed seam g' , thus forcing the sliding of the flanges to occur upon the seam g , at the ends of which the displacement is obvious. It will also be understood that the metal in the flanges a' and b' is materially changed in form during the twisting operation, and receives a permanent set to such form before and during the final closing of the seams. It is well known that longitudinal blanks bent in the form shown in Fig. 6 are in practice, when formed, more or less warped or buckled, so that the flanges a' and b' upon the opposite edges of the section a or b would not lie in the same flat plane. The seaming of the sections together brings the flanges a' and b' into contact without materially affecting the tendency of the sections to warp or buckle, and a perfectly straight pipe is not therefore produced by the mere joining of the seams. I have, however, discovered that the twisting operation serves to remove all the buckle from the pipe and to make it exceedingly straight, while the "set" imparted to the respective sections and the seams formed upon their edges serve to hold the pipe permanently in such straight condition. By retaining the seams in a radial position upon the finished pipe at the close of the final seaming operation, as shown in Figs. 2, 3, and 8, the standing seam greatly re-enforces the pipe in every direction and imparts to it an unusual degree of strength and rigidity.

It will be understood by reference to Fig. 1 that the edges of the sections a and b in the untwisted pipe are parallel with the axis of the cylinder or pipe which they form, the curvature of the metal being transverse at the edges to such axis, while an inspection of Fig. 3 will show that the twisting operation entirely changes the cylindrical curva-

ture of the metal, so that the line of the curvature is not parallel with the edges of the sections, but at an angle thereto equal to the arc through which the pipe is twisted.

The spiral seam formed upon the pipe in my invention is a much longer and more gradual spiral than could be formed by spirally winding a single blank and securing its overlapped edges, and my construction is readily distinguished from any pipe having a single spiral seam instead of two or more, as in my invention.

The blanks for the sections may be formed with oblique ends, so that when the pipe is twisted its ends will be at right angles to its axis. When the standing seam is used, the pipe-lengths may be readily fitted together by flattening down or removing a portion of the seam at each end and fitting the ends to enter one into the other, as is common with sheet-metal pipes, and shown upon the pipe in Fig. 3 at h and h' .

It is immaterial how the pipes are twisted after seaming or how the seams are finally locked to hold the sections in their twisted position, and no means for locking the seams is therefore shown herein.

Having thus set forth my invention, what I claim is—

1. As a new article of manufacture, a sheet-metal pipe formed in two or more longitudinal sections and having twisted seams at the joints of the sections, substantially as herein set forth.

2. As a new article of manufacture, sheet-metal pipes in uniform lengths formed in two or more longitudinal sections and having twisted seams at the joints of the sections, substantially as herein set forth.

3. As a new article of manufacture, a sheet-metal pipe formed in two or more longitudinal sections and having twisted standing seams at the joints of the sections, substantially as herein set forth.

4. As a new article of manufacture, a sheet-metal pipe formed in two or more longitudinal sections and having twisted standing seams at the joints of the sections, with the projection of the seam removed at the ends of the pipe and the ends longitudinally flared and tapered to join the same in series, substantially as herein set forth.

5. As a new article of manufacture, a sheet-metal pipe formed in two or more longitudinal sections united by longitudinal standing seams and having the sections and seams twisted and held in a twisted condition by the locking of the seams, as and for the purpose set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

CHARLES L. HART.

Witnesses:

ANSON O. KITREDGE,

HENRY COLWELL.

(No Model.)

J. C. BAYLES.
PIPE SECTION.

No. 427,658.

Patented May 13, 1890.

Fig. 1

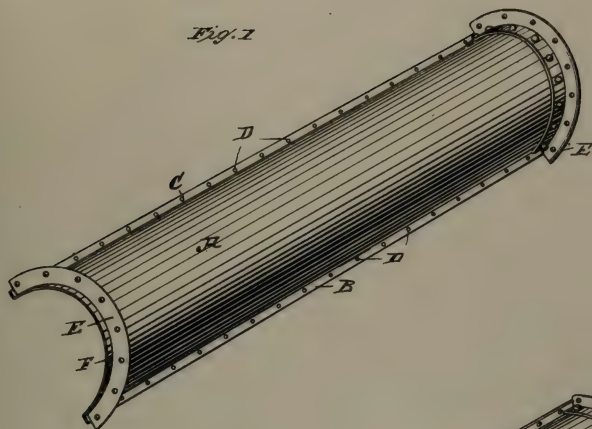


Fig. 2

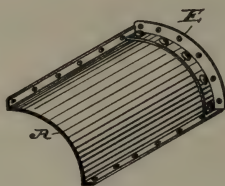
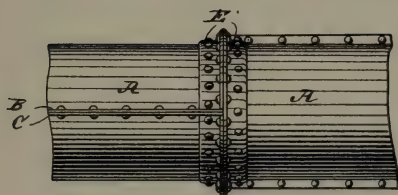


Fig. 3



Witnesses:

Robert F. Gaylord
Ernest Hopkinson

Inventor

James C. Bayles

By

Duncan Curtis Page

Attorneys.

UNITED STATES PATENT OFFICE.

JAMES C. BAYLES, OF NEW YORK, N. Y.

PIPE-SECTION.

SPECIFICATION forming part of Letters Patent No. 427,658, dated May 13, 1890.

Application filed July 13, 1889. Serial No. 317,458. (No model.)

To all whom it may concern:

Be it known that I, JAMES C. BAYLES, of the city, county, and State of New York, have invented certain new and useful Improvements in Pipe-Sections, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

The present invention relates, generally, to longitudinally-seamed pipes, but particularly does it relate to the construction of the separate parts or sections thereof—that is, it is the object of the invention to construct the sections of the pipe so that they will all be duplicates or interchangeable, as also so that they will be adapted to be put together at the place of employment without the use of special tools and without the necessity for the sections being further shaped or otherwise constructively worked upon.

The invention consists of a pipe-section shaped to the circle of the pipe or forming a segmental part thereof, having outwardly bent and punched flanges along its opposite longitudinal edges and provided at each of its ends with a segmental coupling part adapting it to be bolted to the ends of similar sections.

In the drawings, Figure 1 is a perspective view of a half-circle pipe-section embodying the invention. Fig. 2 is like view of a part of a quarter-circle section. Fig. 3 is a plan view of a pipe composed of half-circle sections, showing how the sections are joined together.

Referring to these views in detail, A represents the blank or body part of the section. This is composed of any suitable sheet or plate metal. It is rolled or otherwise curved into a semicircular form corresponding to the shape of the pipe, and the longitudinal outwardly-projecting flanges B and C are formed along its longitudinal edges, and these flanges are punched to form the bolt or rivet holes D. E are the segmental coupling heads or connections. These are composed of angle-iron bent to the proper curve and riveted to the ends of the blank A by the rivets E. Preferably one end of the blank projects slightly beyond its coupling-head, as seen at F, to

form a support or guide for the end of the section to be attached thereto.

Fig. 2 illustrates a section forming but a one-fourth part of the pipe. This section is constructed similarly to that of Fig. 1. Obviously the pipe may be composed of any number of sections more than two, and such sections may be made in the form of pipe of a cross-sectional shape other than that shown.

In Fig. 3 sections of the construction shown in Fig. 1 are shown bolted or riveted together into the form of a pipe, the seams being offset, so that the coupling parts break joints and serve to hold one another firmly in place circularly as well as longitudinally.

The special advantage connected with pipe-sections thus made is that they may be readily nested or secured together in compact bundles of sizes convenient for handling, which permit packing the sections into a very much smaller space than would be occupied by the finished pipe made therefrom. This effects great saving in the cost of transportation and makes it possible to ship pipe economically over long distances.

The sections are readily assembled and riveted and bolted together, and no special skill is required therefor, nor is a special assembling plant or special tools or machinery therefor demanded at the place where the pipe is to be formed and laid.

I am aware that pipe has been made of two or more longitudinal sections outwardly flanged and adapted to be riveted together, as also that various forms of coupling parts have been attached to such pipe, and I do not claim such a structure.

My invention embodies a pipe-section flanged and punched for riveting to other like sections, and provided with a segmental coupling part at each end forming only the corresponding part of the whole coupling that the longitudinal section does of the pipe, whereby the sections of a pipe are all alike and interchangeable.

What is claimed as new is—

1. As a new article of manufacture, the herein-described longitudinal segmental pipe-section, consisting of a blank shaped to the form of a pipe, and having outwardly-bent

punched flanges along its longitudinal edges and provided with segmental coupling parts riveted to the ends thereof, and adapted to be bolted to the coupling parts of a similar section, substantially as set forth.

5 2. In a pipe or tube section, the combination of two or more longitudinal segmental sections having outwardly-bent flanges along their longitudinal edges, and segmental coup-

ling parts secured to the ends of each of said segmental sections, whereby the several sections of a completed pipe are duplicates and interchangeable, as set forth.

JAMES C. BAYLES.

Witnesses:

ROBT. F. GAYLORD,
ERNEST HOPKINSON.

A. GERSDORFF.
FUNNEL.

No. 453,798.

Patented June 9, 1891.

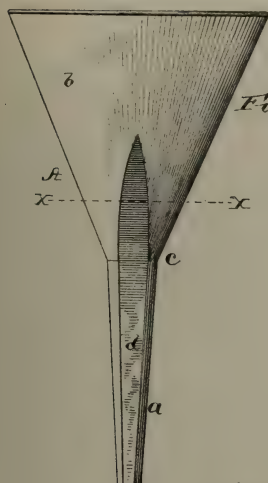


Fig. I.

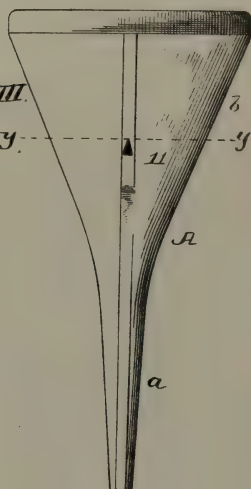


Fig. III.

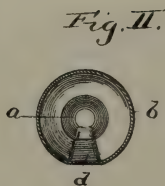


Fig. II.

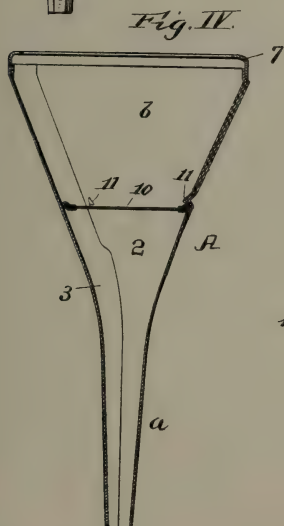


Fig. IV.

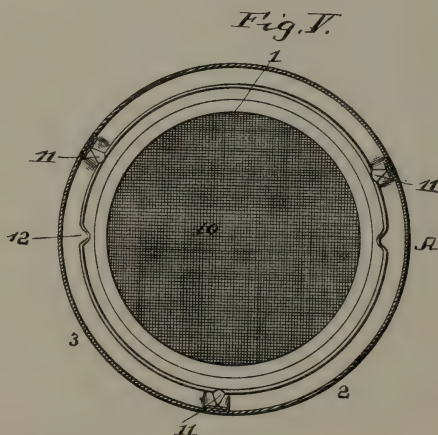


Fig. V.

Witnesses:
J. B. McGirr.
Wm. A. Belt.

Inventor:
Augustus Gersdorff
By Edwin B. Bost,
his attorney.

UNITED STATES PATENT OFFICE.

AUGUSTUS GERSDORFF, OF BRIDGETON, NEW JERSEY.

FUNNEL.

SPECIFICATION forming part of Letters Patent No. 453,798, dated June 9, 1891.

Application filed June 23, 1890. Serial No. 356,435. (No model.)

To all whom it may concern:

Be it known that I, AUGUSTUS GERSDORFF, a citizen of the United States, residing at Bridgeton, in the county of Cumberland and State of New Jersey, have invented certain new and useful Improvements in Funnels; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improved funnel of that class in which vents are provided in the nozzle for the escape of air while liquids are being poured through the funnel into a vessel.

My invention consists in the combination of a funnel having seats or lugs arranged interiorly within the body thereof and a removable strainer seated within said funnel and having a spring-flange bearing upon the interior seats or lugs, which operate to hold the strainer against displacement, all as will be hereinafter more fully described and claimed.

To enable others to more readily understand my invention, I will now proceed to a detailed description of the same in connection with the accompanying drawings, in which—

Figure I is an elevation of the funnel embodying my invention. Fig. II is a transverse sectional view through the body of the funnel above the joint between the nozzle and body on the plane indicated by the dotted line *x x* of Fig. I. Fig. III is an elevation of my preferred form of funnel having the body and nozzle made of longitudinal sections. Fig. IV is a vertical sectional view through the funnel shown in Fig. III, and Fig. V is a transverse section on the line *y y* of Fig. III.

Like letters and numerals of reference denote corresponding parts in all the figures of the drawings.

A designates my improved funnel, which comprises the tapered body *b* and the nozzle *n*. The body and nozzle may be made of separate pieces and connected together by the joint *c* in the ordinary manner; but as a better and cheaper manner of making the funnel I prefer to construct it in longitudinal sections 1 2 3, which may consist of two, three, or more, each section forming a part of the body and nozzle of the funnel.

The device constructed as shown in Figs. I and II has its round nozzle flattened on one side to form a vent *d*, which vent extends longitudinally of the nozzle and into the body *b* to a point about or above midway of the length of said body, which is advantageous, as it provides for the escape of air should the funnel be placed in a vessel having a mouth of greater diameter than the cross-sectional area of the nozzle.

The preferred form of the funnel shown in Figs. III and IV has its nozzle provided with a plurality of flat sides and forming a series of vents, and the nozzle in the cross-section preferably has the form of a triangle, as shown and described in a prior patent issued to me February 8, 1887, and numbered 357,476.

The sections 1 2 3 of the funnel extend from the top of the body to the lower end of the nozzle, each section forming a part of the body and nozzle. The parts of the section which form the body of the nozzle are each made segmental in cross-section, and the lower parts of said section that form part of the nozzle are flattened. The sections are united together along their side edges through the body of the funnel by bending the same to form flanges and interlocking and soldering the flanges together, thus forming longitudinal seams; but in the nozzle the sections are united by soldering, instead of interlocking the flanges, thus forming continuous smooth seams. The segmental portions of the sections form the body, which is circular in cross-section, and the flattened lower portions of said sections form the triangular nozzle, as shown. The upper end of the funnel is finished and the ends of the joints between the side sections 1 2 3 concealed by an annulus or ring 7, which is bent or curved to extend inward a short distance.

In connection with my improved funnel I employ a strainer 10, which is adapted to be fitted within the body of the funnel and to be held therein by means of lugs 11, formed interiorly within the funnel. In order to provide lugs which shall be sufficiently strong and not easily broken and without weakening the funnel, I stamp or press the lugs through the locked seams which unite the sections of the funnel, and these lugs are preferably tapered and have their lower ends made broad to pro-

vide a bearing-surface against which the screen impinges or bears. To permit the screen to be readily adjusted or fitted within the funnel below the lugs and to remove the screen when desired, I form recesses 12 (one, two, or more) in the edge of the screen by indenting or forcing the edge inwardly. The screen can be readily sprung or forced into position within the body of the funnel and below the lugs therein, which lugs operate to firmly secure the same in place; but to remove the screen from the funnel it must be turned so that one of the lugs enters one of the recesses, after which the screen will readily drop out of the funnel when it is inverted, or it can be removed by hand.

A funnel constructed as contemplated by my present invention can be readily and easily cleaned, as the absence of the joint between the body and nozzle of the funnel provides a smooth surface, which facilitates the cleaning of the funnel.

Changes in the form and proportion of parts can be made without departing from the spirit or sacrificing the advantages of my invention, and I would therefore have it understood that I reserve the right to make such modifications as fall within the scope of my invention.

No claim is herein made to the funnel made of longitudinal sections, each section forming a part of the body and nozzle of the funnel and extending from the point of the nozzle to the top of the body, the sections being joined together by longitudinal seams, nor to the nozzle formed with the flattened side or sides, as these features form the subject-matter of a separate application filed by me on the 19th day of March, 1888, Serial No. 267,645.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

• 1. In combination with the funnel having within the interior of its body the inwardly-projecting lugs, a strainer having a spring-flange, which is adapted to pass downward over and be locked in place by said lugs, substantially as described.

2. In combination with the funnel provided with the inwardly-projecting locking-lugs, and the strainer having a spring-flange, which is thus adapted to pass downward over and to be locked in place by said lugs, and is provided within its edge with notches that when caused to coincide with said lugs will operate to release said strainer and permit of its removal, substantially as herein shown and described.

3. The combination of a funnel provided with the retaining-lugs, which are arranged interiorly within the body of the same, and which lugs are stamped or pressed from the seams which unite the sections of the funnel together, and a strainer provided with a spring-flange, which is adapted to pass downward over and be locked in place by the said lugs, substantially as and for the purpose described.

In testimony whereof I affix my signature in presence of two witnesses.

AUGUSTUS GERSDORFF.

Witnesses:

JAMES J. REEVES,
HUGH L. REEVES.

A. GERSDORFF. FUNNEL.

No. 491,421.

Patented Feb. 7, 1893.

Fig. 1.

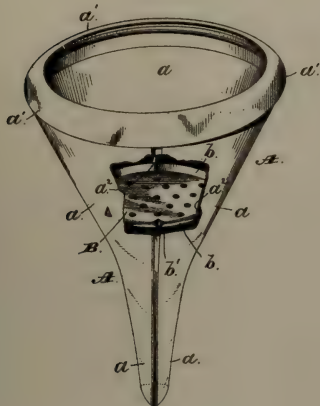


Fig. 2.

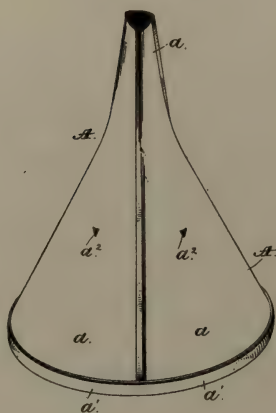


Fig. 4.

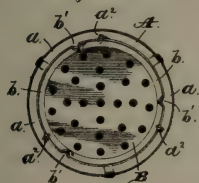


Fig. 3.



Fig. 5.

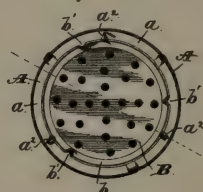
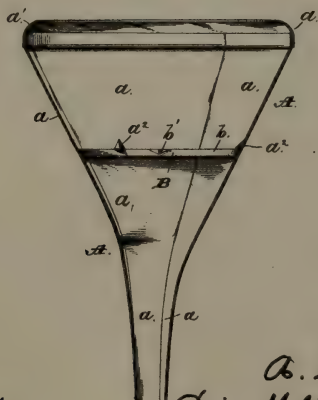


Fig. 6.



Witnesses:
Jas. E. Hutchinson.
Harry C. Hazard.

Inventor.
A. Gersdorff, by
Cindell & Russell, his Attys

UNITED STATES PATENT OFFICE.

AUGUSTUS GERSDORFF, OF WASHINGTON, DISTRICT OF COLUMBIA.

FUNNEL.

SPECIFICATION forming part of Letters Patent No. 491,421, dated February 7, 1893.

Application filed March 19, 1888. Serial No. 267,645. (No model.)

To all whom it may concern:

Be it known that I, AUGUSTUS GERSDORFF, of Washington, in the District of Columbia, have invented certain new and useful Improvements in Funnels; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of my improved funnel, from the upper end, a portion of the side being broken away to show the strainer; Fig. 2 is a like view of the same from the lower end. Fig. 3 is a perspective view of the strainer separated from the funnel. Fig. 4 is a horizontal section of the funnel at the point where the strainer is located and shows the latter in position for engagement with the locking lugs; Fig. 5 is a like view of the same after said strainer is so engaged, and, Fig. 6 is a central longitudinal section of the funnel.

Letters of like name and kind refer to like parts in each of the figures.

My invention is an improvement upon a funnel for which Letters Patent No. 357,476 were issued to me upon the 8th day of February, 1887, and it consists, principally, in the construction of the funnel, substantially as and for the purpose hereinafter specified.

In the construction of funnels it has heretofore been customary to form the body and nozzle separately and then join them together, but such construction has proved defective in consequence of the frequent separation of said parts.

My funnel A is formed from two or more—preferably three—sections *a* and *a'* which are united upon longitudinal lines so that each section extends from the upper end to the lower end of the funnel and constitutes a part of the body and a part of the nozzle of the same, as shown. The joints or seams are all lengthwise of the funnel, and in the direction of the greatest strain—transversely—said funnel presents only solid metal which is strengthened by its curved form and by said seams, and is capable of resisting successfully a much greater force than would ever be exerted by any proper use.

In the practical use of funnels, it frequently happens that the funnel is placed in a vessel having a mouth of larger diameter than the

cross sectional area of the nozzle of the funnel, so that the nozzle depends wholly within the mouth of the vessel and the lower portion of the body of the funnel rests upon the vessel, in which event the funnel prevents the free escape of air displaced in the vessel by pouring a liquid therein.

One of the aims of my present invention is to improve the funnel to avoid the foregoing objection, which is accomplished by providing the nozzle with one or more flattened longitudinal faces to form the vent or vents, and extending the vent or vents into the body of the funnel for a suitable distance and above the joint or line between the body and nozzle of the funnel, whereby air can freely escape through the vent on the outside of the funnel if it is placed on a vessel so that its body is in contact with the mouth of said vessel.

As hereinbefore stated, the funnel is made wholly of longitudinal sections which extend from the top of the body of the funnel to the lower end of the nozzle. The parts of the sections which form the body of the funnel are each made segmental in cross section, and the lower parts of said sections which form the nozzle are flattened. The sections are united together along their side edges through the body of the funnel by bending the same to form flanges and by interlocking and soldering the flanges together, thus forming the longitudinal seams; but in the nozzle, the sections are united by soldering instead of interlocking the flanges, thus forming smooth seams in the nozzle. The segmental portions at the upper ends of the sections form the body of the funnel which body is circular in cross section; and the flattened lower portions of said sections form the nozzle which is triangular in cross section, as shown in the drawings.

A funnel constructed as contemplated by my invention can be readily and easily cleaned, as the absence of the joint between the body and nozzle of the funnel provides a smooth surface on the interior of the funnel, which facilitates the cleaning of the funnel.

The upper end of the funnel has an upward and inward curve and is formed by means of a solid ring *a'* of sheet metal which is given the necessary shape by dies and has such size as to enable its lower edge to pass over and

engage with the upper edges of the sections a and a , where it is secured in place by solder and operates to thoroughly strengthen said parts and prevent their separation at such point.

Within the body of the funnel is a strainer B which is constructed from sheet metal and its central portion perforated, and around its edge is provided with a flange b that extends upward and outward at substantially the same angle as the adjacent sides of the funnel. Said strainer bears fairly upon the converging sides of said funnel and is thereby prevented from passing below a certain point and is locked in such position by means of two or more lugs a^2 and a^2 which project inward from the sides of the funnel and engage with the upper edge of the flange b . The lugs a^2 and a^2 have downwardly and inwardly inclining faces and the strainer B is placed in position by inserting one edge beneath the lug or lugs at one side of the funnel and then pressing the opposite side of said strainer downward until its flange has sprung inward sufficiently to enable it to pass the lug or lugs at such point.

In order that the strainer may be removed from the funnel, when desired, its flange b is provided with notches b' and b' which correspond in size and number to the like features of the lugs a^2 and a^2 , and have such relative arrangement that by a partial rotation of said strainer, said notches may be caused to coincide with said lugs and thus release said strainer. The same result will be secured however, if but one notch is provided, as by causing such notch to coincide with one of the lugs, the side of the strainer in which said notch is located will be released and can be raised so as to withdraw the opposite side from engagement with its locking lugs.

No claim is herein made to the combination of the funnel having the lugs arranged interiorly within the body thereof, and the strainer provided with the spring flange which is thus adapted to pass downward beneath the lugs and to be held or locked in place by the same, as said devices form the subject matter of a separate application filed by me on the 23d day of June, 1890, Serial No. 356,435.

Having thus described my invention what I claim is—

1. As a new article of manufacture, a funnel made of longitudinal sections united together by longitudinal seams and each section forming a part of the body and nozzle of the funnel, the nozzle having flattened sides which form air vents that extend longitudinally of the nozzle, into the body, and above the line where said nozzle joins the body, substantially as described.

2. As a new article of manufacture, a funnel made of longitudinal sections united together by longitudinal seams and each section forming a part of the body and nozzle of the funnel, the nozzle having flattened sides which form air vents that extend longitudinally of the nozzle, into the body, above the line where the nozzle joins the body, the seams of the body being formed by interlocking and soldering flanges and the seams in the nozzle being soldered together, whereby the inner surface of the body and nozzle is made smooth, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand this 17th day of March, 1888.

AUGUSTUS GERSDORFF.

Witnesses:

JAS. E. HUTCHINSON,
GEO. S. PRINDLE.

(No Model.)

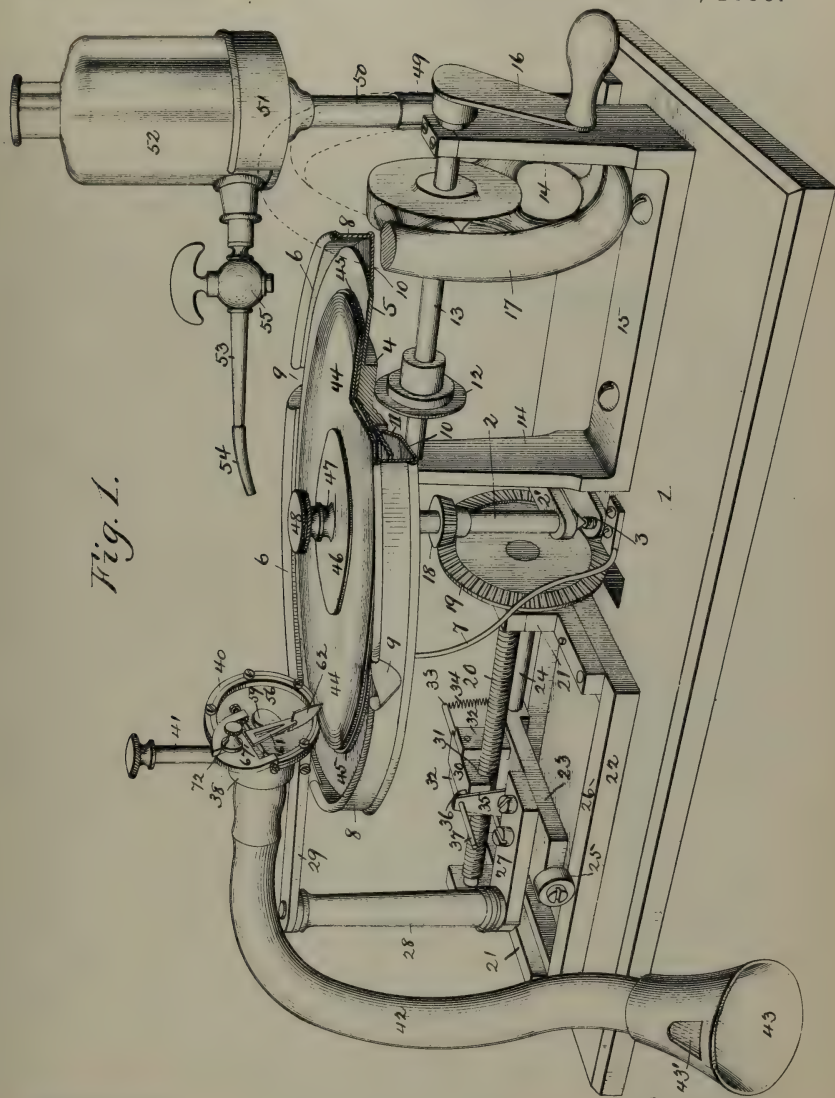
4 Sheets—Sheet 1.

E. BERLINER.
GRAMOPHONE.

No. 534,543.

Patented Feb. 19, 1895.

Fig. 1.



Witnesses;
Roy C. Bowen,
F. T. Chapin

Inventor;
Emile Berliner,
By Joseph Lyons,
Attorney.

E. BERLINER.
GRAMOPHONE.

No. 534,543.

Patented Feb. 19, 1895.

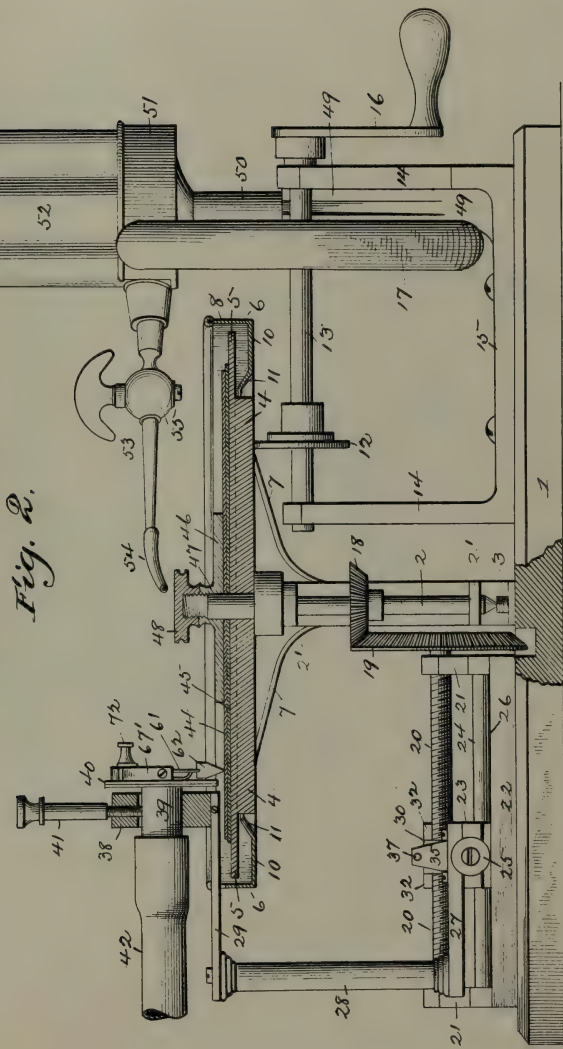


Fig. 2.

Witnesses:
J. B. McGirr.
F. J. Chapman

Inventor,
Emile Berliner,
By *Joseph Lyons.*
Attorney

E. BERLINER.
GRAMOPHONE.

No. 534,543.

Patented Feb. 19, 1895.

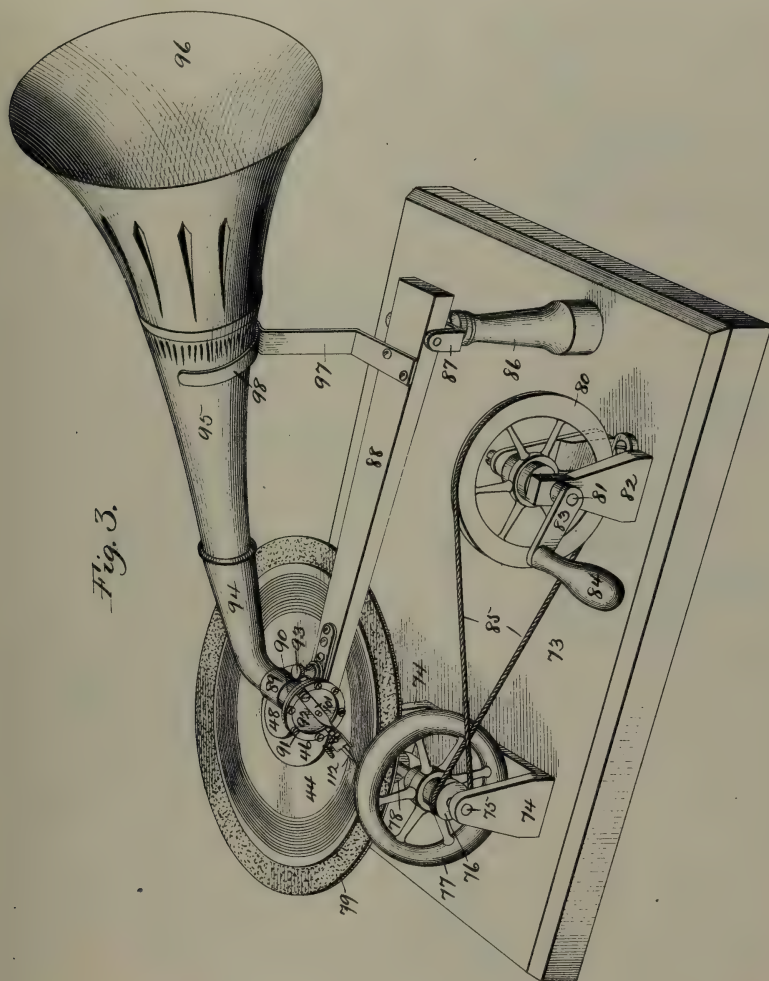


Fig. 3.

Witnesses;

Rey C. Bowen.
H. T. Chapman.

Inventor;

Emile Berliner,

By Joseph Lyons.
Attorney.

E. BERLINER. GRAMOPHONE.

No. 534,543.

Patented Feb. 19, 1895.

Fig. 4.

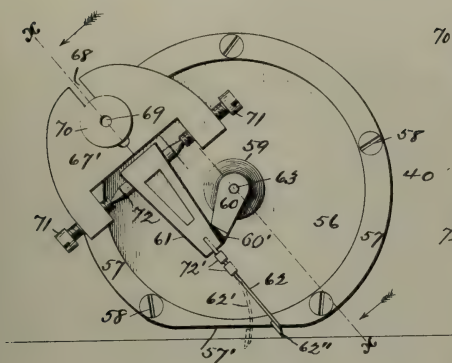


Fig. 5.

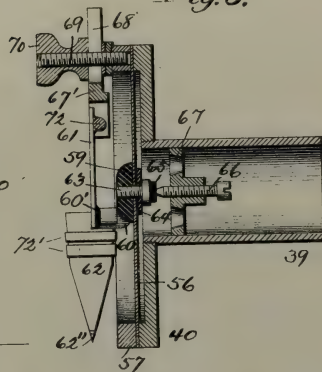


Fig. 6.

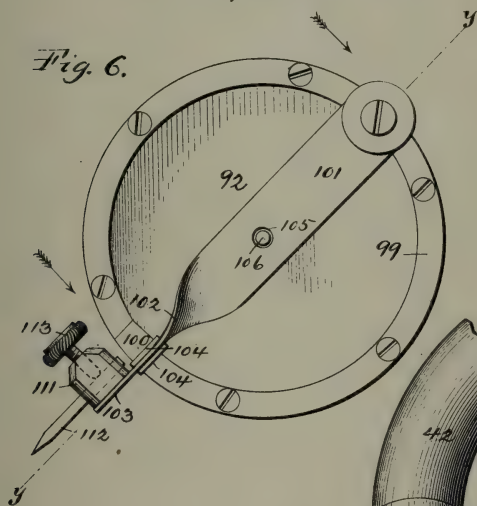


Fig. 7.

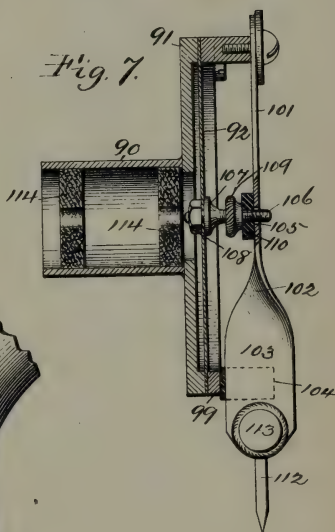
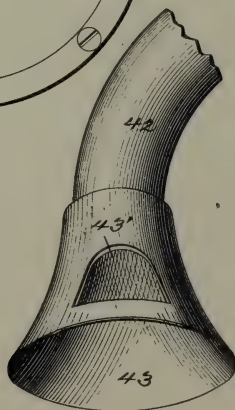


Fig. 8.



Witnesses;

Percy C. Bowen.
F. T. Chapman

Inventor;

Emile Berliner,

By Joseph L. Goss.
Attorney.

UNITED STATES PATENT OFFICE.

EMILE BERLINER, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR
TO THE UNITED STATES GRAMOPHONE COMPANY, OF SAME PLACE.

GRAMOPHONE.

SPECIFICATION forming part of Letters Patent No. 531,543, dated February 19, 1895.

Application filed March 30, 1892. Serial No. 427,060. (No model.)

To all whom it may concern:

Be it known that I, EMILE BERLINER, a citizen of the United States, and a resident of Washington, District of Columbia, have invented certain new and useful Improvements in Gramophones, of which the following is a specification.

My invention has reference to improvements in the method of and apparatus for recording and reproducing sounds, the improvements being more particularly directed to the construction of that kind of sound recording and reproducing apparatus which I have called "gramophone," and for which Letters Patent of the United States No. 382,790, dated May 15, 1888, have been granted to me.

One feature of my invention has reference to improvements in the method of recording sound by tracing upon a fatty film deposited upon a metallic surface, undulatory lines, corresponding to sound waves, and then etching such lines in the metal base, or as it is now commonly called, the record tablet; while the other features of my invention have reference to the construction of the details of both the recorder and the reproducer of the gramophone. Each of these features of improvement are designed to overcome certain difficulties, and to avoid certain imperfections heretofore met with in the operation of the gramophone. These difficulties and imperfections, and the manner in which they are avoided, will be particularly pointed out in the following detailed description with reference to the accompanying drawings, in which—

Figure 1, is a perspective view of my improved gramophone recorder. Fig. 2 is a side elevation, partly in section, of the recorder. Fig. 3 is a perspective view of a gramophone reproducer. Fig. 4, is an elevation of a recording diaphragm and stylus. Fig. 5, is a section of the same on the line $x-x$ of Fig. 4. Fig. 6, is an elevation of the gramophone reproducing diaphragm and stylus. Fig. 7, is a section of the same on line $y-y$ of Fig. 6, and Fig. 8, is a perspective view of an improved mouth-piece for the recorder.

Like numerals of reference indicate like parts throughout the drawings.

My improved gramophone recorder is shown

as a whole in Figs. 1 and 2, mounted upon a suitable base 1. About midway of the length of this base there is an upright shaft 2, journaled in brackets 2', 2', stepped at its lower end in a suitable bearing 3. This shaft carries at its upper end a circular disk 4, the outer or peripheral portion of which is reduced in thickness as shown at 5, and this reduced portion extends over a ring shaped pan 6, supported by stays or brackets 7, from which it may be lifted and removed, when required. The outer edge or wall 8, of the pan is of sufficient height to project for a distance above the disk 4, and is provided with pouring lips 9, for a purpose hereinafter described. The bottom 10 of the pan extends under the reduced portion 5, of the disk 4, and its inner edge 11, is upturned close to the under side of the reduced portion of the disk, as shown.

Bearing against the under side of the disk 4, is a friction wheel 12, secured to a horizontal shaft 13, which latter is journaled in the upper ends of posts or uprights 14 constituting the ends of a frame, the base 15, of which is secured to the base 1 of the apparatus. The position of shaft 13, and the diameter of the friction wheel 12, are such, that a portion of the weight of the disk 4, and of its shaft 2, is supported by the friction wheel; whereby the bearing 3, is relieved from a portion of that weight, and whereby frictional gearing between the disk 4 and wheel 12 is insured, without requiring special adjustment. The shaft 13, carries at its outer end a crank 16, by means of which it is rotated, and between the two uprights 14, there is secured to the shaft a heavy fly or balance wheel 17. Secured to the upright shaft 2, below the disk 4, there is a beveled pinion 18, meshing with a large bevel gear 19, on one end of a horizontal screw-threaded shaft 20, which is arranged radial to the disk 4, and journaled adjacent to the said gear 19, and also at the other end, in pillow-blocks 21, supported on the end piece of a rectangular frame 22, which in turn is fast on the base 1. Mounted upon the frame 22, so as to be movable thereon in the direction of the length of the shaft 20, there is a carriage 23, supported at one end by a guide rod 24, on which it is free to slide, and at the other end by a roller 25, movable

along the upper surface 26, of one of the side pieces of the frame 22. The carriage 23, has firmly secured to it a projecting arm 27, on the outer end of which is an upright post 28, carrying at its upper end an arm 29, parallel with the arm 27, and of such length as to overhang the disk 4, when the carriage is moved to the right, as represented in the drawings; the construction being such, that when the carriage 23 is moved in the manner to be described, the arm 27, will be carried radially over the disk 4, and any object carried thereby will participate in said movement.

The carriage 23, is moved in one direction by means of the screw-threaded shaft 20, and in order to effect this operation, there is provided a block 30, in one side of which, near one end, is formed a half nut 31, constructed to engage the threads on the shaft 20; and this block 30, is pivotally supported between ears 32, erected on the carriage 23. Projecting from the other end of the block 30, there is a pin 33, to which one end of a spring 34, is attached, the other end of said spring being secured to the carriage 23, and the tendency of the spring is to maintain the block 30, in a tilted position with the nut portion raised out of engagement with the shaft 20. In order to lock the block 30, in engagement with the shaft 20 there is provided a leaf spring 35, mounted on the carriage 20, opposite the free end of the block 30, and having on its free end a tooth 36, which passes over the top of the hinged block 30, when the nut formed in the same is in engagement with the screw threads on the shaft 20, the tendency of the leaf spring 35, being to move inwardly toward the block 30. This catch spring 35, is also provided with a pin 37, which serves as a handle for withdrawing the catch so as to unlock the block 30, and thereby allow the carriage 23 with its appurtenances to be freely moved to any position upon the frame 22.

To the free overhanging arm 29, is secured a ring sleeve 38 which receives the neck 39, projecting on one side from the frame 40, in which latter the recording diaphragm and stylus are mounted, and this neck 39, with its appurtenances is fixed in any desired position in the ring frame 38, by a clamp screw 41. The free end of the neck 39, projects beyond the ring frame 38, and receives the sound conveying tube 42, which is preferably made flexible, and which has at its free end a mouth-piece 43, the particular construction of which will hereinafter be more fully described.

The disk 4, which is in the nature of a rotary table, has hereinbefore been described and is shown in the drawings as reduced in thickness on that portion of the periphery which overlaps the inner wall of the pan 6, and if this construction is used, the disk 4, must be removable from the shaft 2. It is, however, also practicable to make the disk or revolving table, in two parts, the lower part of which extending only to within a short dis-

tance of the upper edge of the inner wall of the pan, while the upper part extends to that edge to within a short distance of outer wall of the pan. This is indicated by dotted line in Fig. 2, and if this construction is adopted, only the upper thinner part of table is removable from the upright shaft while the lower thicker part of the table must be fixed to that shaft.

When a sound record is to be made, a record tablet of the kind described in my aforesaid Letters Patent, is placed upon the rotary table 4, and this record tablet is represented in the drawings as a circular disk 44, which has central perforation passing over the upper end of the shaft 2. Sometimes it is convenient to interpose between the record tablet and the rotary supporting table a thin disk 45, of felt, or of some other non-resonant material. This, however, is not essential. Upon the record tablet is placed a clamping plate 46, which by preference is provided with a hub 47, which is slipped over the upper end of the shaft 2. This upper end of the shaft 2, is screw-threaded as shown, and a thumb nut 48, is then screwed down upon the hub of the clamping plate, whereby the record tablet is securely fastened in position.

At one end of the base plate 1, there is mounted a standard 49, which may be a split tube as shown, and in which is supported a friction stem 50, projecting from the bottom of a shelf 51, and which in turn supports a vessel 52, containing alcohol. From the bottom of this vessel extends a tube 53, preferably provided at its free end with a flexible nozzle 54; and a stop-cock 55, with which the tube is provided permits the operator to regulate the flow of alcohol from the nozzle. With my present improvement it is necessary that during the whole process of tracing the record, the record tablet be covered with a film of alcohol, and for this purpose a thin stream of alcohol is directed upon the center of the tablet, or rather upon the clamping plate from which the alcohol spreads in all directions by centrifugal force, and flows over into the pan 6. When the tracing of the record has been completed, the clamping plate is removed and the record tablet also is lifted from its support by the insertion between the same of a sharp edge, such as a knife blade, or even by the finger nails of the operator, and is removed for further manipulation as described in my aforesaid Letters Patent, and also for the manipulation which will be described hereinafter.

Only a very small quantity of alcohol is used for producing a single record, but after continued use of the machine a considerable amount of alcohol accumulates in the pan, and this is removed by removing the tablet 4, or the upper, thinner part thereof, as the case may be, by inserting a finger in each of the pouring lips 3, and thus lifting the disk or table 4, from the shaft 2. The pan is then removed from the bracket 7, and the alcohol

is poured out and preferably back into the vessel 52, by one of the pouring lips.

The recording diaphragm 56, is mounted in the circular frame 40, between a ledge formed on said frame and an annulus 57, screwed down upon the same by screws 58, as shown, or in any other suitable manner. On the rear side of that diaphragm there is applied a small block 59, of hard rubber from which extends radially an arm 60, which at its free end is turned up at right angles, outwardly and into contact with the lever 61, which carries the recording stylus 62.

The block 59, is fastened to the center of the diaphragm by a screw 63, passing through the diaphragm and through a washer 64, applied to the front side of the diaphragm. The head of this screw is faced with a disk 65, of soft rubber, and against the same bears the point of an adjusting screw 66, which is mounted in a perforated disk or spider 67, fixed in the neck 39.

The lever 61 is mounted on a plate 67', formed with a slot 68, through which a set screw 69, fixed in the annulus 57, passes. The plate 67', can thus be adjusted to various positions on the annulus, and is clamped in the adjusted position by a thumb-nut 70. One end of the plate 67' is bifurcated, and screws 71, 71, passing through the legs of the fork, are formed at their ends with bearings for the pivot points of the arbor 72, which is fixed to the lever 61. This lever, is made as light as practicable and as is consistent with rigidity, and the plate 67', together with the lever 61, which it carries, is so adjusted that the upturned end of the arm 60, bears upon the lever at the greatest practicable distance from the axis of the spindle 72, viz: at the free end of the lever. The connection between the lever and the upturned end of the arm 60 is made by a small quantity of pitch, 60', which acts as an efficient cement, and which is applied after the lever has been adjusted to its proper position. This mode of connecting the lever with the arm 60, and thereby with the diaphragm, I have found to be of great advantage for a variety of reasons, but more especially on account of the ease with which the connection is made, and unmade in case of repair, and on account of the damping effect it has upon the lever.

To the end of the lever 61, is secured the recording stylus 62, by soldering or otherwise, with its plane at right angles to the plane of the lever, as shown. The stylus is composed of a flat, and rather thin plate of spring steel, pointed at its free end, and provided with a tracing point 62'', of iridium. The broad portion of the stylus is damped by one or two bands 72', of soft rubber, which are simply slipped over the same.

By reference to Fig. 4, it will be seen that the lever 61, with the recording stylus 62 extend across the diaphragm upon a line which constitutes a chord but not a diameter of the circle of the diaphragm. They are, therefore,

eccentrically mounted with reference to the center of the diaphragm; but notwithstanding this eccentric location, the lever is rigidly connected with the center of the diaphragm and thus receives the maximum amplitude of its vibration. By thus placing the lever with the stylus eccentric with reference to the center of the diaphragm both the lever and the stylus may be and are made shorter than if they were located on the line of a diameter of the diaphragm. This is an important result, since the shorter the lever and stylus, the less liability there is of lost motion, and the less liability there is of extra or spontaneous vibrations of the lever and stylus, and both of these facts conspire to produce an accurate tracing of the sound waves impinging against the diaphragm.

Where the stylus passes over the edge of casing 40, the latter, together with the annulus 57, is cut away upon a straight line, as indicated at 57'. This permits a further reduction of the length of the stylus, since the record tablet may be located close to the straight edge 57'.

The body of the stylus is normally curved downwardly, as shown in dotted lines at 62', but when the diaphragm holder or frame 40, is turned to cause the stylus to impinge upon the record tablet, which is the preparatory step for making a record, the stylus is unbent and becomes straight, as shown in solid lines in Fig. 4, and I have found that the best results are obtained when the stylus is at an angle of about forty-five degrees with the plane of the tablet. The maximum pressure of the stylus upon the record surface is therefore equal to the force required to unbend the stylus. It is very small, because the stylus is made as thin as practicable, and it is uniform for different records and for all parts of the same record.

The mouth-piece, into which vocal sounds are uttered for recording, is shown at 43, in Figs. 1 and 8, and it consists of a bell shaped structure, the small end of which is secured to the sound conveying tube, while the wide, flaring end is turned toward the speaker who applies his mouth to the opening. Near the edge of the mouth opening there is a perforation 43', cut into the wall of the mouth-piece, and this perforation is of such shape and size, and at such distance from the edge of the mouth-piece, as to fit approximately the edge of the nose of the speaker; so that when the mouth-piece is applied, the sounds uttered by the mouth enter the wide, flaring opening, while the sounds uttered by the nose enter the perforation 43'.

In making a record of vocal sounds, it is necessary that all sound waves composing the words or the song be conveyed to the diaphragm, and it has, therefore, been proposed to make mouth-pieces of such size and shape as to admit within the opening both the mouth and the nose of the speaker or singer, and to fit against the face of the user around the

mouth and nose. Mouth pieces of this character are necessarily large and clumsy, and do not readily and comfortably fit different persons, while with my construction the size of the mouth-piece is reduced, and will comfortably fit different speakers.

By means of the apparatus so far described, a record of sound waves is made in the following manner: The spring catch 35, 36, is drawn back, which permits the spring 34, to lift the block 30, from the screw 20, so that the carriage 23, may be freely moved to the left, whereby the stylus 62, is carried beyond the edge of the rotary table 4. A record tablet prepared in the manner described in my aforesaid Letters Patent is then placed upon the table 4, and clamped to the same, as hereinbefore described, and the carriage 23, is moved toward the right until the point of the recording stylus is above the tablet but within the edge of the same. The casing 40, is then turned in its bearing 38, until the point of the stylus impinges upon the tablet and is unbent, as shown in Fig. 4. In this position the casing 40, is clamped by means of the screw 41. The stop-cock 55, is then opened and a thin stream of alcohol is directed upon the clamping disk 46. The wheel 17, is now rotated by means of the crank and handle 16, whereby, by means of the gearing described, the record tablet is rotated, while the stylus is carried across the face of the tablet in a radial line, removing from the tablet a fine spiral line of the fatty etching ground with which it had been covered. Sound waves are now directed against the diaphragm in any desired manner, and if vocal sounds are to be recorded, the sound conveying tube 42, with the mouth piece 43, will be used. The vibrations of the diaphragm thus produced will cause the stylus to make a tracing of an undulatory line, corresponding to the sound waves directed against the diaphragm; all as described in my aforesaid Letters Patent. During this whole time a thin stream of alcohol is delivered upon the plate 46, and the alcohol spreading out in all directions is maintained as a uniform and constantly renewed film upon the tablet. In this manner every part of the record is made under alcohol, and in this respect my present invention differs from the process set forth in my aforesaid Letters Patent.

In accordance with the said patent, alcohol is poured once for all over the tablet, and is allowed to evaporate during the process of recording. I have found that in this manner it often happens that the alcohol has entirely evaporated before the record is completed, so that a portion of the latter is made upon a dry tablet; whereby the accumulation of filamentary particles of dust on the point of the stylus, which the alcohol is designed to avoid, takes place during the production of a portion of the record. With my present improvement this defect is cured, since it maintains the record tablet moist with alcohol from the beginning to the end of the operation.

After the tracing of the record has been completed, the tablet is speedily removed and before the record is fixed by etching as described in my aforesaid patent, the alcohol adhering to the record surface is quickly washed off with water. This is an important step in my improved process and greatly improves the definition of the record by etching. The reason for this is, that the alcohol slightly attacks and dissolves the fatty etching ground, so that the thin film of alcohol remaining upon the tablet, contains a slight quantity of that ground in solution. If now, the film of alcohol is allowed to evaporate an exceedingly small quantity of the dissolved ground is deposited upon the metal which has been laid bare by the stylus. This small deposit of ground sufficiently resists the action of the etching fluid to impair the definition of the final record. By simply pouring water over the record surface immediately after the tablet has been removed from the recording apparatus the film of alcohol and the ground held in solution by the same is removed, and the tracings of the stylus present a clean metallic surface, which is properly attacked by the etching fluid.

The reproducing apparatus as a whole is represented in Fig. 3.

Upon a base board 73, in standards 74, is journaled a shaft 75, upon which are mounted a driven pulley 76, a fly-wheel 77, and a friction disk 78. The latter is in frictional engagement with a rotary table 79, which is mounted upon a vertical shaft substantially in the manner described with reference to the rotary table 4, of the recording apparatus. Fig. 3, being a perspective view, the mounting of the table 79, is not visible, but is easily understood from the foregoing description. The upper surface of the table is preferably covered with a sheet of felt or other elastic and non-resonant material, as indicated by appropriate shading.

Upon the felt covered table 79, the record tablet 44, is placed and is clamped thereon substantially in the manner in which this is done in the transmitting apparatus, *i. e.*, by means of a clamping plate 46, and a thumb-nut 48. A driving wheel 80, mounted on a shaft 81, which is journaled in standards 82, is rotated by means of a crank 83, and handle 84, and gives motion to the table 79, by means of a crossed belt or cord 85. The relation of the table 79, to the friction disk 78, is the same as the relation of the table 4, to the friction disk 12; that is to say, the table rests with the greater part of its weight upon the friction disk, so that the frictional gearing is automatically maintained. A post 86, mounted upon the base-board 73, has swiveled upon its upper end a fork 87, between the prongs of which is pivoted the swinging arm 88, which extends over the table 79, and has at its free end a clasp 89, which receives the neck 90, which projects from the center on one side of the casing 91, of the reproducing

diaphragm 92. This casing with its diaphragm, stylus and appurtenances, which will presently be described, can be thus turned in the clasp, and can be fixed in any adjusted position by a clamp screw 93.

Upon the end of the neck 90, which projects beyond the clasp 89, is slipped a flexible tube 94, which in turn receives the small end of a sound conveying trumpet 95, the flaring end 96 of which is turned toward the listener. A bracket 97, secured to the swinging arm 88, carries at its free end an elastic fork 98, which receives and supports the trumpet, and the parts are so proportioned that the free end of the swinging arm in preponderates, so that the point of the reproducing stylus, which will presently be described, presses rather firmly upon the record tablet.

It will now be understood, that when a record tablet, having a record of sound waves upon its surface, produced in accordance with my invention, is mounted upon the table 79, and when the point of the stylus is adjusted in engagement with the record groove, and the wheel 80, is rotated, the rotating record groove will guide the stylus across the face of the tablet, and will at the same time vibrate the stylus and diaphragm in accordance with the undulations of the record groove. The sound waves thus produced by the diaphragm will issue from the flaring opening of the trumpet, and the sounds will be heard by a listener in front of the trumpet, or in its vicinity.

The reproducing diaphragm is mounted in the casing 91, in the usual manner, being held against a ledge by means of an annulus 99. On this annulus is formed a swelling or block 100, and diametrically opposite to the same the stylus carrying spring 101, is fastened to the annulus, and extends across the face of the diaphragm and beyond the edge of the annulus. This spring 101, is a leaf spring which faces with its flat side the face of the diaphragm up to a point beyond the center of the latter, and is then twisted at right angles, as indicated at 102, and crosses the annulus edgewise as shown at 103. The tendency of the part 101, of the spring is to press toward the diaphragm, whereby the edge of the part 103, is made to bear with some force upon the annulus 99; and the tendency of the part 103, is to press against the swelling or block 100. The spring is therefore elastic in two directions at right angles to each other.

In order to prevent grinding of the spring against the annulus and against the block 100, a U-shaped piece 104, of soft rubber embraces the outer portion 103, where it bears upon the annulus and against the block. This soft rubber cushion also serves as a dampener for the spring. At the point where the spring passes over the center of the diaphragm, it has a perforation 105, and a screw pin 106, secured to the center of the diaphragm by two nuts 107, 108, extends loosely through the perforation. A thumb-nut 109, also placed on the screw-pin 108, and a soft rubber washer

110 between the thumb-nut and the spring serve to regulate the tension of the latter and of the diaphragm, as will be readily understood.

On the free end of the spring 101, 103, there is secured a binding post 111, in which the stylus 112, is held by the set screw 113, and may be adjusted to project to the required distance beyond the end of the spring. This stylus is preferably made of hard steel. It has a slunder point, but the point should not be so sharp as to cut the bottom of the record groove which it engages.

In the operation of reproducing the sounds recorded on a tablet, the stylus is guided by the walls of the record groove, and not by the bottom of the same. Consequently it is not essential that the point of the stylus be in contact with the bottom of the groove. In fact it is preferably not in contact with the same, so that this point may be made rather dull.

The sounds emitted by the reproducing diaphragm are very powerful and ordinarily too loud to be received with comfort by a listener in front of the trumpet or other receiving tube. For this reason I have found it sometimes necessary, to reduce the volume of the emitted sound before it reaches the ear, and this I accomplish by one or more perforated and exchangeable diaphragms 114, placed in the neck 90. These diaphragms should be made of some non-resonant material like soft rubber, or cork, as indicated by appropriate shading.

Having now fully described my invention, I claim and desire to secure by Letters Patent—

1. The method of recording vocal and other sounds which consists in removing from a record tablet covered with a fatty film, undulatory lines of said film by, and in accordance with the sound waves and maintaining at the same time a layer of a fluid over the film, substantially as described.

2. The method of recording vocal and other sounds upon a rotating disk covered with a fatty film which consists in spreading over said film and continuously renewing over the same a layer of a fluid and at the same time removing from said tablet undulatory lines of the fatty film by and in accordance with the sound waves, substantially as described.

3. The improvement in the art of making a gramophone record which consists in immersing and maintaining the tablet and the point of the recording stylus in alcohol during the process of recording, substantially as described.

4. The improvement in the art of making and fixing a gramophone record which consists in removing from a tablet covered with a fatty film undulatory lines of said film by and in accordance with sound waves while said film is covered with a layer of alcohol; then immediately removing the alcohol with water and then subjecting the tablet to the

action of an etching fluid, substantially as described.

5. The method of reproducing sounds from a record of the same which consists in vibrating a stylus and propelling the same along the record by and in accordance with the said record, substantially as described.

6. In a gramophone, a recording stylus pressing by its own elasticity upon the record tablet at right angles to the plane of its vibratory movements and consisting of a leaf spring terminating in a point of harder material than that of the body of the stylus, substantially as described.

7. In a gramophone, the combination of a sound receiving diaphragm and an elastic recording stylus controlled by the diaphragm and adjustable with reference to a record tablet so as to press by its own elasticity upon the same at right angles to the plane of its vibratory movements, substantially as described.

8. In a gramophone a recording stylus pressing by its own elasticity upon the record tablet at right angles to its plane of vibratory movements, and consisting of a leaf spring terminating in an iridium point, substantially as described.

9. In a gramophone, a recording stylus composed of a leaf spring terminating in a tracing point in combination with one or more elastic non-sonorous dampers, substantially as described.

10. In a gramophone a recording stylus formed of a leaf spring terminating in a tracing point in combination with one or more sleeves of soft rubber upon the leaf spring for damping the same, substantially as described.

11. In a gramophone, the combination of a sound receiving diaphragm, a lever and a recording stylus carried by the same, both extending parallel but eccentrically over the diaphragm; with a connection between the center of the diaphragm and the lever, substantially as described.

12. In a gramophone, the combination of a sound receiving diaphragm a lever and a recording stylus carried by the same, both extending over the face of the diaphragm but eccentrically thereto, with a rigid connection between the center of the diaphragm and the free end of the lever, substantially as described.

13. In a gramophone, the combination of a circular sound receiving diaphragm, a lever and an elastic recording stylus both extending parallel with the diaphragm on the line of a chord, with a rigid connection between the center of the diaphragm and the free end of the lever, substantially as described.

14. In a gramophone, the combination of a sound receiving diaphragm, a lever and an elastic stylus carried by the same, both extending parallel, but eccentrically thereto; with a bracket rigidly connected with the center of the diaphragm and removably ce-

mented to the lever, substantially as described.

15. In a gramophone, the combination of a sound receiving diaphragm mounted in a suitable frame, a bracket adjustably mounted on said frame, a lever pivoted in said frame extending parallel to and eccentrically with reference to the center of the diaphragm, and an elastic recording stylus carried by the lever; with a mechanical connection between the center of the diaphragm and the free end of the lever, substantially as described.

16. In a gramophone a sound receiving diaphragm and a tube for conveying sound waves thereto in combination with a recording stylus receiving motion from the diaphragm, and a screw mounted in the sound conveying tube bearing centrally upon the diaphragm for adjusting the tension of the latter, substantially as described.

17. In a gramophone, the combination of a horizontal rotary table adapted to support a record tablet, and a vertical shaft free to move longitudinally, carrying the table; with a friction disk engaged by the under side of the table for rotating the latter, substantially as described.

18. In a gramophone the combination of a horizontal rotary table mounted upon a vertical shaft and adapted to support a record tablet; with a friction disk engaging the under side of the table and partly sustaining the weight of the table, whereby the latter is automatically maintained in frictional gear with said disk, substantially as described.

19. In a gramophone, the combination of a rotary horizontal table adapted to receive and support a flat record tablet; with a reservoir of a suitable fluid, such as alcohol, discharging upon the center of the table and tablet, and an annular pan disposed underneath the table for receiving the overflow of alcohol, substantially as described.

20. In a gramophone the combination of a horizontal rotatable table adapted to receive and support a record tablet; with a reservoir of alcohol discharging upon the center of the table and tablet, an annular pan disposed under the edge of the table for receiving the overflow of alcohol, and a friction disk bearing upon the under side of the table between the center of the same and the inner wall of the pan, substantially as described.

21. In a gramophone, the combination of a horizontal rotary table adapted to receive and support a record tablet, a recording diaphragm and stylus connected by gearing with the table to move radially over and with the stylus in operative relation to the same, substantially as described.

22. In a gramophone, the combination of a horizontal rotating table adapted to receive and sustain a flat record tablet, with a carriage movable in a line parallel to a radius of the table, a recording diaphragm and stylus carried by the carriage with the stylus in operative contact with the record tablet, and

gearing connecting the table with said carriage, substantially as described.

23. In a gramophone, a sound conveying tube provided with a mouth piece having a flaring opening for the application of the mouth of the speaker and a perforation in the side wall of the mouth piece separated from and spaced with reference to the mouth opening and shaped to correspond to the shape of the nostrils of the speaker, substantially as described.

24. In a gramophone a sound reproducing diaphragm in combination with a stylus lever extending diametrically across the same, and elastic in two directions at right angles to each other, substantially as described.

25. In a gramophone, the combination of a diaphragm and a stylus carrier composed of a leaf spring twisted at one point so as to bring the edge of one portion at right angles to the face of the other portion, whereby it is elastic in two directions, substantially as described.

26. In a gramophone the combination of a reproducing diaphragm and stylus; with a stylus carrier composed of a leaf spring extending flat-wise over the face of the diaphragm and edgewise over the edge of the diaphragm, substantially as described.

27. In a gramophone the combination of a reproducing diaphragm mounted in a suitable frame the latter being provided at one point with a boss or stop; with a double elastic stylus carrier composed of a twisted leaf-spring tending toward the diaphragm and against the boss or stop, substantially as described.

28. In a gramophone, a reproducing diaphragm and stylus in combination with an elastic stylus carrier extending over the face of the diaphragm and tending toward the same, of an adjustable connection between the diaphragm and stylus carrier and adjustable for varying the pressure between diaphragm and style carrier, substantially as described.

29. In a gramophone the combination of a reproducing diaphragm mounted in a suitable frame provided with a boss or stop; with a

double elastic stylus carrier tending toward the diaphragm and toward the stop, and elastic non-resonant dampers interposed between the style carrier and the diaphragm and between the style carrier and the frame and stop, substantially as described.

30. In a gramophone a sound reproducing diaphragm and a sound conveying tube for the same, with one or more non-resonant perforated diaphragms in the said tube for reducing the volume of sound conveyed to the ear substantially as described.

31. In a gramophone a recording stylus pivoted to move in response to the vibrations of a diaphragm and elastic in a plane at right angles to such motions, substantially as described.

32. In a gramophone, a reproducing stylus having a wedge-shaped point engaging the walls of the record groove, substantially as described.

33. In a gramophone reproducer, a stylus carried or formed by a spring fixed at one end to the diaphragm holder and freely extending across and beyond the same and operatively connected with the center of the diaphragm, substantially as described.

34. In a gramophone reproducer, a spring constituting or carrying a stylus, fixed at one end to the diaphragm holder and extending across and beyond the periphery of the same and freely pressing against the diaphragm, substantially as described.

35. In a sound reproducing apparatus consisting of a traveling tablet having a sound record formed thereon and a reproducing stylus shaped for engagement with said record and free to be vibrated and propelled by the same, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EMILE BERLINER.

Witnesses:

HENRY E. COOPER,
F. T. CHAPMAN.

No. 612,639.

Patented Oct. 18, 1898.

J. CLAYTON.
AUDIPHONE.

(Application filed Dec. 8, 1896.)

(No Model.)

Fig. 1.

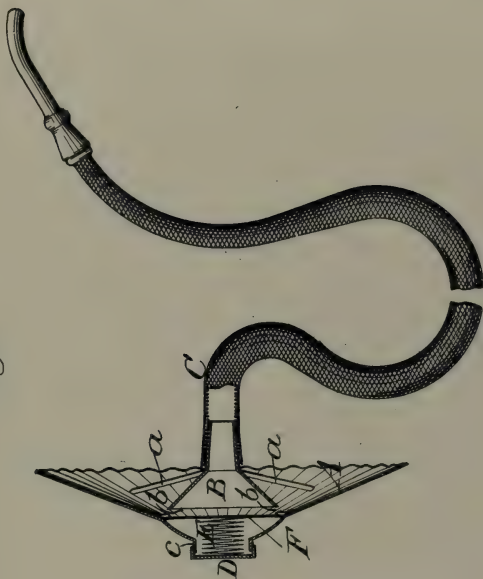
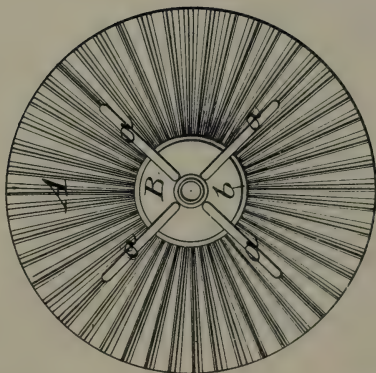


Fig. 2.



Witnesses:-
George Barry Jr.
Edward Chew.

Inventor:-
James Clayton
by attorneys
Hunt & Howard

UNITED STATES PATENT OFFICE.

JAMES CLAYTON, OF NEW YORK, N. Y.

AUDIPHONE.

SPECIFICATION forming part of Letters Patent No. 612,639, dated October 18, 1898.

Application filed December 8, 1896. Serial No. 614,868. (No model.)

To all whom it may concern:

Be it known that I, JAMES CLAYTON, of the city of New York, (Brooklyn,) in the county of Kings and State of New York, have invented a new and useful Improvement in Audiphones, of which the following is a specification.

I will first describe my invention with reference to the accompanying drawings and afterward point out its novelty in the claims.

Figure 1 in the accompanying drawings represents a central sectional view of one example of an audiphone embodying my invention and provided with a flexible ear-tube. Fig. 2 is a face view of the same with the flexible ear-tube omitted.

A is a conical disk, opposite to the concave face of which is concentrically arranged the trumpet-mouth B of a sound-conducting tube C, represented as a flexible ear-tube, the said trumpet-mouth having its concavity in the opposite direction to that of the disk and being so affixed to the disk, as by radial arms *a*, that an annular opening *b* is left between the edges of said mouth and the face of the disk. In front of the central portion of the disk opposite the trumpet-mouth there is distended a diaphragm F of suitable material, as very thin steel, the edges of the said diaphragm being united with the disk A, so that the annular opening *b*, before mentioned, is also between the diaphragm and the trumpet-mouth.

The portion of the disk A which surrounds the trumpet-mouth B is, in the example of the invention represented by the drawings, corrugated in radial lines from the diaphragm to its own circumference. The said disk has a central opening, around which is a socket *c*, and to this socket is fitted a cap D. Between this cap and the back of the diaphragm is placed a light coil-spring E, which is made to press with more or less force on the diaphragm, according as the cap is adjusted on the socket toward or from the diaphragm.

The operation is as follows: The instrument is held by the listener with the concave face of the disk A toward the speaker or

source of sound, and the end of the ear-tube is placed in his ear. The sound-waves striking the disk are gathered therein toward the center thereof and are thereby directed over the diaphragm and into the trumpet-mouth of the conducting or ear tube, the vibrations of the diaphragm greatly assisting in the sound transmission. The adjustment of the cap D and the adjustment of the pressure of the spring upon the diaphragm thereby produced give the diaphragm greater or less tension and a more or less active vibration, which can be regulated as may be found desirable by the person using the instrument. It has been found by careful and repeated experiments in the use of an instrument of this kind that as compared with a smooth conical disk the radially-corrugated disk is very much more effective.

What I claim as my invention is—

1. In an audiphone, the combination of a conical disk, a flexible diaphragm distended in front of the central portion of the concave face of and having its edges attached to said disk, and an ear-tube having a trumpet-mouth which is attached concentrically to said disk with its concavity in the opposite direction to the concavity of the disk and with an annular opening between its edges and the disk and diaphragm, substantially as herein described.

2. In an audiphone, the combination of a conical disk having a central opening, a flexible diaphragm distended in front of the concave face of and having its edges attached to said disk, an adjustable cap fitted to the central opening of the said disk behind the diaphragm, a spring located between the said cap and diaphragm for varying the tension of the diaphragm as the cap is adjusted, and an ear-tube having a trumpet-mouth attached to the said disk at the concave face thereof opposite to and spaced from the diaphragm, substantially as herein described.

JAMES CLAYTON.

Witnesses:

FREDK. HAYNES,
LIDA M. EGBERT.

No. 632,015.

Patented Aug. 29, 1899.

G. L. HOGAN.
GRAPHOPHONE.

(Application filed Apr. 15, 1899.)

(No Model.)

Fig. 1.

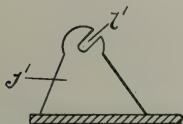


Fig. 3.

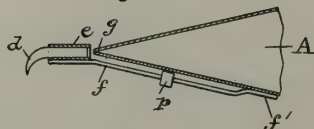


Fig. 2.

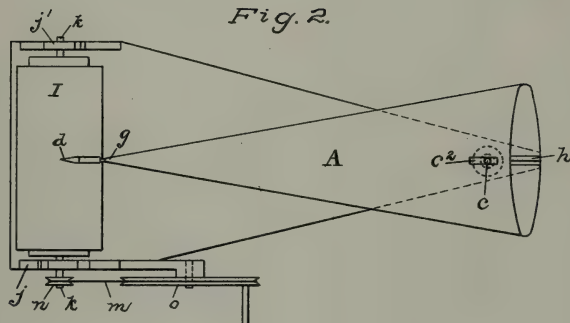


Fig. 6.

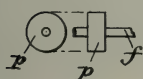


Fig. 4.

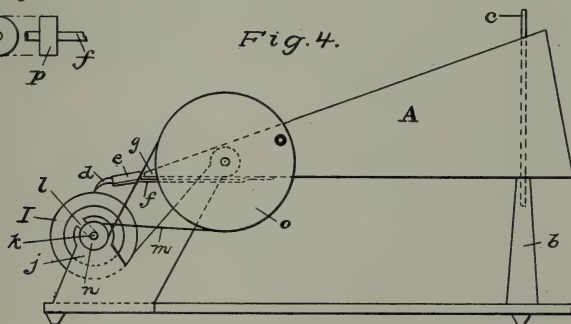
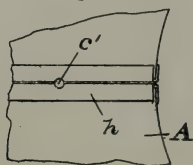


Fig. 5.



Witnesses:

Charles B. Mann Jr.
George Koether.

Inventor:

George L. Hogan

By Chas B. Mann

Attorney.

UNITED STATES PATENT OFFICE.

GEORGE L. HOGAN, OF BALTIMORE, MARYLAND.

GRAPHOPHONE.

SPECIFICATION forming part of Letters Patent No. 632,015, dated August 29, 1899.

Application filed April 15, 1899. Serial No. 713,078. (No model.)

To all whom it may concern:

Be it known that I, GEORGE L. HOGAN, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Graphophones, of which the following is a specification.

My invention relates to improvements in graphophones or devices designed for reproducing articulate speech or other sounds recorded on phonograms or sound-writings.

The object of my invention is to provide a device or mechanism of a simple, cheap, and durable construction by means of which such phonograms or sound-writings may be accurately and perfectly audibly produced without any attendant disagreeable scraping, grating, or other interfering noise resulting from the action of the mechanism.

My invention consists of a sound-generator in the form of a trumpet of conical shape made of a tough quality of paper, vulcanized fiber, or other material and having a rigidly-attached small rod of hard material, the extremity of which is brought to a fine point and bent so as to fit in the spiral grooves of the phonogram-writing and pivoting said trumpet.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a sectional view of a portion of the base on which the cylinder is mounted. Fig. 2 is a top view of the machine complete. Fig. 3 is a sectional view of the point end of the trumpet on a somewhat larger scale. Fig. 4 is a side elevation of the complete machine. Fig. 5 is a detail view of part of the trumpet, showing the manner of joining its edges. Fig. 6 is a detail view of the adjustable cushion.

The large end of the trumpet *A* rests on a stud *b*, where it is pivoted loosely on a vertical rod *c*, extending from the stud upward. This gives the point end of the trumpet a free lateral swinging movement. The trumpet has on its lower side a hole *c'* and on its upper side a slot *c''*, through which the rod passes. The longitudinal slot *c''* affords a slight range of up-and-down movement to the point end. A hard downward-curved point *d* is attached to the small end of the trumpet, and said point rests on the phonogram-cylinder, and

as the same is revolved the spiral groove of the writing serves as the means to carry the point *d* from one end to the other of the cylinder, the trumpet swinging on its pivot *c*. No other feeding or guiding device is required.

The hard point *d* may be attached to any portion of the wall of the sounding-trumpet and yield good results. I have, however, provided a novel means of attachment that will now be described. The hard point *d* is preferably held in a socket *e*, from which it may be removed when desired. The socket is fixed on the end of a rod *f* and has position in front of the point end *g* of the trumpet. This rod extends along below the small end of the trumpet, and its end *f'* is attached to the side of the trumpet some distance back from the said point end. This manner of locating the hard point *d* and connecting it with the side wall of the trumpet, but back from its point end *g*, produces the best results.

The trumpet is made of a sheet of tough paper or thin indurated fiber, and each of the two edges of this material that come together when the sheet is folded to the cone form are first bordered by a thin sheet-metal strip folded longitudinally, as shown at *h* in Fig. 5. This metal strip incloses the sheet edge like a clip and extends from the large end to the point end. The two metal strips are abutted together and joined by solder. This metal strip not only serves as a means of joining the sheet edges, but also serves to augment and improve the sounding qualities of the trumpet.

It is a feature of improvement in this invention to attach the end *f'* of the rod to which the hard point is secured to the said metal joint-strips *h*. Thereby the metal strips become the conductor for the sound vibrations, which latter are evenly distributed all along the wall of the trumpet. The pivot-hole *c'*, heretofore referred to, is through this metal strip.

The phonogram-cylinder *I* is held in position by two bearings *j j'* and a horizontal axis *k*. The bearings are slotted out instead of being bored, so that the phonogram-cylinder can easily be lifted out of these bearings. The slots *l* in the two bearings are cut at right angles to one another and are in such a position that the force of elasticity of an

india-rubber belt *m*, connecting the pulley *n*, attached to the phonogram-cylinder, with the pulley *o* of the driving device, will keep the axis of the phonogram-cylinder always pressed firmly in the bearings, and thus produce a steady movement. By this simple means I have found that articulate speech, songs, and instrumental or other music may be reproduced from sound-writing very accurately and with great loudness, clearness, and distinctness.

It will be seen that this graphophone has a cylinder that may be rotated by any driving mechanism and a sounding-trumpet whose point end is movable along the cylinder, following the sound-writing. The point end automatically follows the spiral groove of the sound-writing, and the vibrations are transmitted to the trumpet, which generates and largely increases the volume of sound.

As the hard point *d* is held in a socket, it may be removed when worn and a new one inserted.

An adjustable cushion *p* is shown in Figs. 3 and 6, as a ring, and is mounted on the rod *f* and may be shifted along said rod. This cushion bears on the wall of the trumpet, and its varying position alters the tone or pitch of the sound.

A cylinder is shown carrying the sound-writing; but it is obvious a disk may be used instead or any shaped body to rotate.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A graphophone having in combination a rotating sound-writing; a vibratory cone-shaped sounding-trumpet pivoted to allow its

point end a free swinging movement, and also a slight vertical movement; a hard point engaging the surface of the said sound-writing in front of and in line with the point end of the trumpet but not contacting therewith and supported by a rod which extends along the outer wall of the trumpet and attached to the side thereof.

2. A sounding-trumpet for graphophones comprising a sheet of fiber folded to form a cone and the edges which come together bordered by strips of metal folded over the edges and the said metal strips united, and a hard point at the point end of the trumpet.

3. A sounding-trumpet for graphophones having a cone shape and made of fiber; a strip of thin metal extending longitudinally of said cone and secured to the trumpet; a hard point in front of the trumpet's point end but not attached thereto; and a rod supporting the said hard point and extending along the outside of the trumpet and attached to said metal strip.

4. A graphophone having a base provided with two bearings each having a slot inclining in a different direction from the other; a rotary cylinder carrying the sound-writing and having journals resting in said slotted bearings; a pulley on one journal; a drive-pulley; and a belt from the drive-pulley to the cylinder-pulley; as and for the purpose set forth.

In testimony whereof I affix my signature in the presence of two witnesses.

GEORGE L. HOGAN.

Witnesses:

GEORGE KOETHER,
CHARLES B. MANN, Jr.

No. 647,147.

Patented Apr. 10, 1900.

F. MYERS.
GRAPHOPHONE.

(Application filed Dec. 15, 1899.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

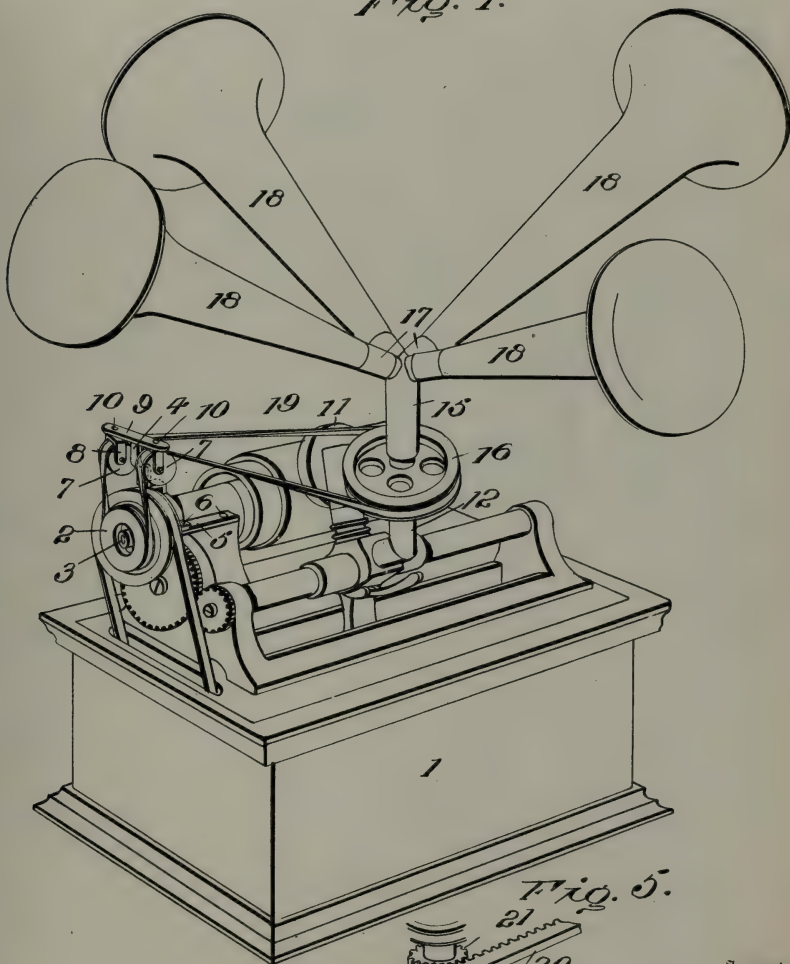
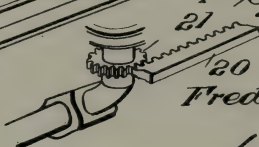


Fig. 5.



Witnesses

Jno. Imrie
F. J. Hartman

Inventor
Frederick Myers
by E. P. Bunn, Jr.,
his Attorney

No. 647,147.

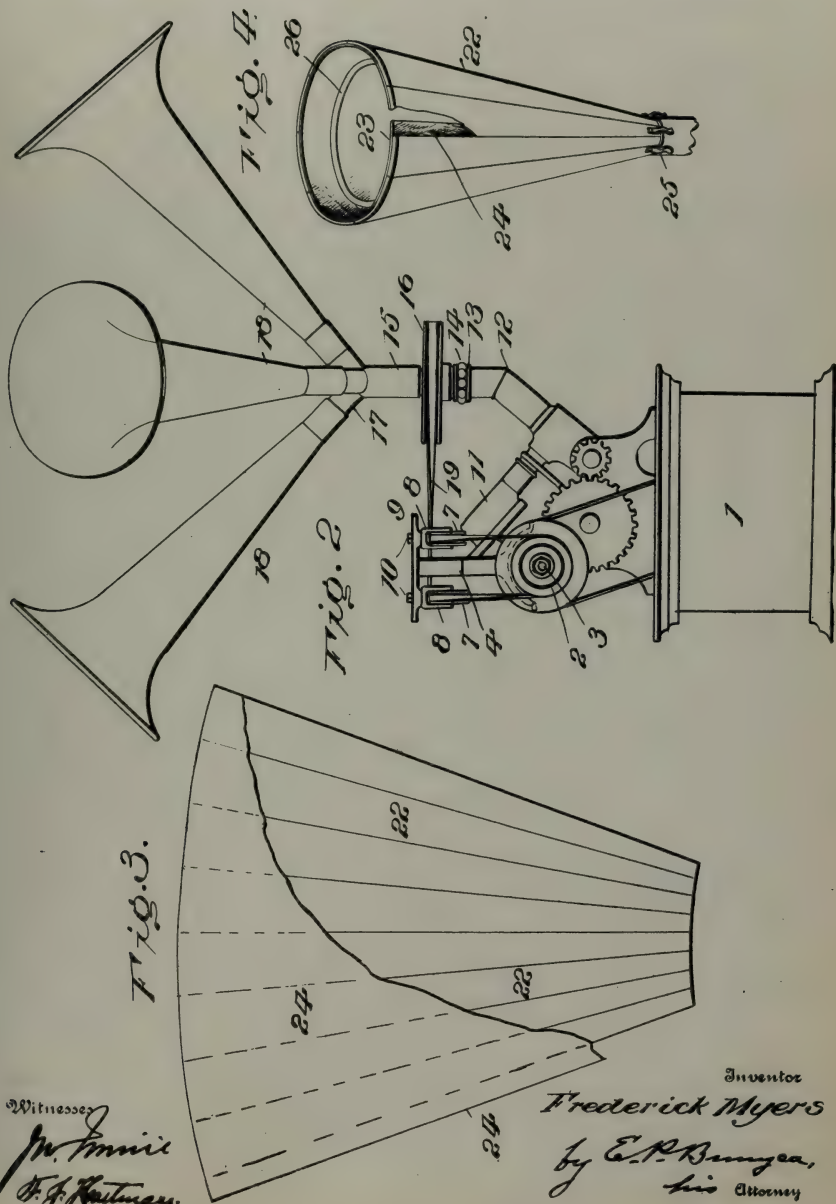
Patented Apr. 10, 1900.

F. MYERS.
GRAPHOPHONE.

(Application filed Dec. 15, 1899.)

(No Model.)

2 Sheets—Sheet 2.



Witnesses
J. M. Miller
F. J. Hartman

Inventor
Frederick Myers
by *E. P. Bungea*,
his Attorney

UNITED STATES PATENT OFFICE.

FREDERICK MYERS, OF NEW YORK, N. Y.

GRAPHOPHONE.

SPECIFICATION forming part of Letters Patent No. 647,147, dated April 10, 1900.

Application filed December 15, 1899. Serial No. 740,481. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK MYERS, a citizen of the United States, residing at New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Sound Transmitters or Disseminators; and I declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to sound transmitters or disseminators for phonographs, megaphones, and similar devices; and the objects of the same are to produce a device designed to be attached to any ordinary sound-producing instrument and which will project or disseminate the sound in all directions radially from the instrument.

The defects heretofore existing in sound-reproducing instruments of the class referred to are to a great extent due to the fact that the sound is usually projected in one direction only, and while the horn or tube through which the sound is transmitted may be adjusted to project the sound in any one direction persons sitting outside the range of the horn or tube do not get the full volume or force of the music or other reproduction.

By my invention the defects referred to are entirely remedied, as by its use an audience seated in a circle around the instrument can hear equally well, the reproduction being of the same volume and scope at all points from the instrument outward. I am also enabled to produce a peculiar and pleasing effect in certain classes of music to be reproduced, said effect consisting in giving a vibratory swell or variable sound-wave character to the music, owing to the revolution given to the transmitter horns or tubes. The usual metallic or grating sounds in phonographic reproductions are to a great extent absorbed and obviated by my invention, and certain classes of music are rendered in a greatly-modulated tone and in well-measured and uniform time, owing to the fact that the revolving horns act as a speed-regulator for

the instrument and at the same time distribute the sound equally at all points around the machine.

Figure 1 is a perspective view of a graphophone having my attachment connected thereto and showing four horns or transmitter-tubes. Fig. 2 is an end view of the same, three horns or tubes being shown. Fig. 3 is a plan view of a blank for one of the horns or tubes which I may use. Fig. 4 is a perspective view of a horn or tube made from said blank. Fig. 5 is a detail perspective of a modification in the means employed for actuating or revolving the horns or tubes.

Like numerals designate like parts wherever they occur in the different views.

Referring now to Figs. 1 and 2, the numeral 1 designates a graphophone of the well-known type. Beyond placing a small pulley 2 upon the end of the record-shaft 3 no alterations or changes are made in the structure of instruments of this character. A small upright bracket 4, having feet 5 attached by screws 6 to a permanent part of the instrument, serves as a support for two idlers 7, journaled in hangers 8, pivoted at the opposite ends of a cross-bar 9 upon the ends of the screws or bolts 10. To the usual short section of tubing projecting out from the lower portion of the reproducer 11 is a tubular elbow 12, having a flange 13 surrounding its vertical portion. This flange serves as a support for a ball-bearing 14 of suitable construction, said ball-bearing being attached to a tubular section 15, having a pulley 16 rigidly connected thereto. The upper end of the tubular section 15 has three or more radially-projecting tubular nipples 17, to which the horns or tubes 18 are connected. An elastic or india-rubber band 19 passes under the pulley 2, up and over the idlers 7, and around the pulley 16.

The operation of my invention as thus far described is as follows: The reproducer 11 having been set or placed in position to start at the beginning of the record-tube the starting-lever is moved to actuate the record-shaft 3. Motion is thus imparted to the pulley 2, around which the elastic band 19 passes, and from thence the revolution is communicated to the idlers 7 and to the pulley 16, with which

the horns or tubes 18 revolve. As the reproducer 11 moves from one end of the record-tube to the other to reproduce the piece of music or other record the elastic band 19 is elongated to the extent required, and the horns or tubes 18 are thus revolved during the entire time the shaft 2 revolves. The band 19 being small and quite elastic does not absorb but little power, and as the idlers 7 are journaled in swiveled hangers they turn to direct the elastic band in a straight line to the pulley 16 and create but little friction.

As shown in Fig. 5, a rack and pinion may be used for giving revolution to the horns. The rack 20 may be attached in any suitable manner to the casing of the instrument and supported at the required height to be engaged by a pinion 21 on the tube 15. As thus arranged when the reproducer moves from end to end of the record-tube the pinion 21 engages the rack 20 and the horns 18 are revolved.

It will be obvious from the foregoing that my attachment is quite simple and inexpensive, can be quickly applied to any sound-producing instrument of the class referred to, and will project the sound outward in all directions from the instrument. The horns or tubes being connected directly to the reproducer and extending radially outward have a tendency to give the entire force or volume to the production, even though the horns were permitted to remain stationary, and for some classes of music it is deemed equally as effective to permit the horns to remain stationary by throwing the elastic band 19 off the pulley 16. Again, for certain productions I have found that a single horn if revolved will give a peculiar combined modulated and swelling effect. When stationary, I have found that at least three horns are necessary to give good results and to project the sound equally from the instrument outward.

As shown in Figs. 3 and 4, the horn or tube which I may use is made of cardboard or similar light and durable material, and such tubes may be made to occupy but little space in shipping and at the same time be inexpensive and very efficient in use. When thus made, I take a piece of cardboard and score or crease it at intervals, or a sufficient number of strips 22 of cardboard or similar material and lay them edge to edge and attach to one or both faces thereof a piece of textile fabric 23, permitting one edge 24 of the fabric to project beyond the outer strip of the series. This edge may be ready gummed, so that the tube can be readily finished by moistening the gummed edge and attaching it to the opposite edge to complete the tube, or I may use other means for securing the edges. These tubes may thus be shipped flat or folded and can be easily made up by the purchaser. To make the tubes easily attach-

able to the reproducer-nipples any suitable number of spring-fingers 25 may be connected to the small end of the tube, and a wire ring 26 may be inserted into the large end of the tube to give the necessary strength to the device, or I may use a flat or flanged ring for the end of the tube. Tubes made in this way may have a coating of aluminium paint or bronze to give them a metallic luster.

I have found that tubes or horns made of a non-metallic material have a tendency to obviate the screeching sound so common in phonographs, and, besides, their lightness in weight makes them particularly desirable for my purpose.

Certain changes in the details of construction may be resorted to without departing from the spirit and scope of my invention. Hence I do not wish to be understood as being restricted to the details shown and described.

I claim—

1. In a sound-reproducing instrument, a sound-producer, a horn or tube connected to said producer, and means for revolving said horn or tube during the operation of the instrument.

2. In a sound-reproducing instrument, a sound-reproducer, a plurality of horns attached thereto, and means for revolving said horns during the operation of the instrument.

3. An attachment for sound-reproducing instruments, comprising a plurality of horns connected to a tubular section, and means for revolving said tubular section.

4. In a sound-reproducing instrument, a tubular section, a pulley secured thereto, a plurality of horns attached to said tubular section, a belt or band passing around the pulley and around a pulley revolved from the record-shaft.

5. In a sound-reproducing instrument, a plurality of horns secured to a hollow tubular section and projecting outward and upward from the upper end thereof, hollow connections from said tubular section to the reproducer, and means for revolving said tubular section.

6. In a sound-reproducing instrument, a tubular section having a plurality of horns projecting radially from its upper end, a pulley on said tubular section, a rubber band passing around said pulley and around idlers revolved from the record-shaft, and means for revolving the pulley, substantially as described.

7. In a sound-reproducing instrument, a reproducer, a tubular elbow attached to the nipple of said reproducer, a tubular section connected to said elbow, and a plurality of horns extending radially outward from said tubular section, and means for revolving the tubular section during the operation of the instrument.

8. In a sound-reproducing instrument, a reproducer, a tubular elbow connected to

said reproducer, said elbow having a vertically-disposed member, a tubular section connected to said vertical member, a plurality of horns extending radially outward from said tubular section, and means for revolving said tubular section during the operation of the instrument.

In testimony whereof I affix my signature in presence of two witnesses.

FREDERICK MYERS.

Witnesses:

FRANCIS C. NYE,

JOS. H. S. THOMAS.

M. D. PORTER.
COLLAPSIBLE ACOUSTIC HORN.

(Application filed July 31, 1899.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

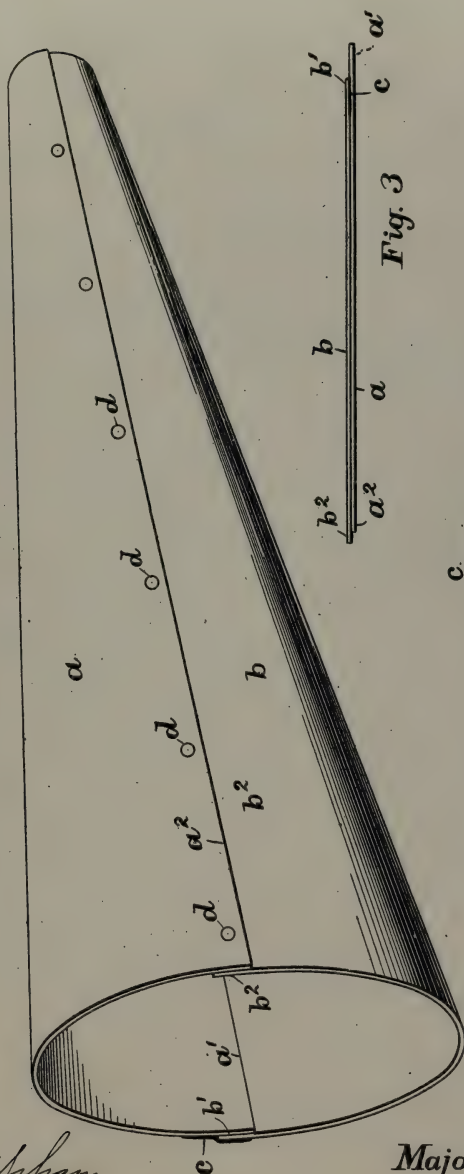


Fig. 3

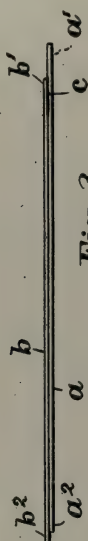
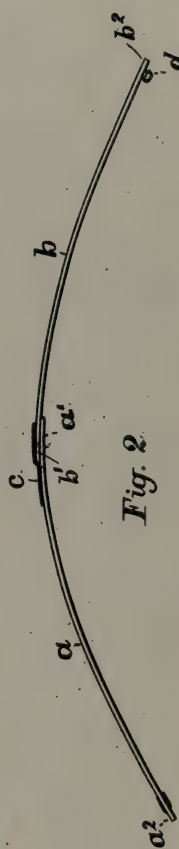


Fig. 2



Attest;

M. U. Upham
J. O. Caller

Inventor,

Major D. Porter;

By A. B. Upham
His Attorney.

M. D. PORTER.
COLLAPSIBLE ACOUSTIC HORN.

(Application filed July 31, 1899.)

(No Model.)

2 Sheets—Sheet 2.

Fig. 4

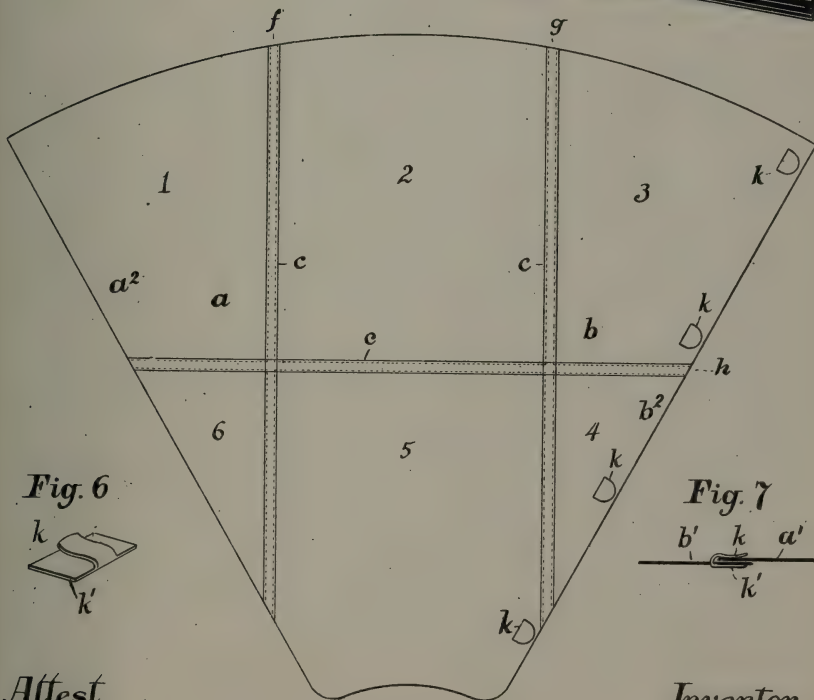
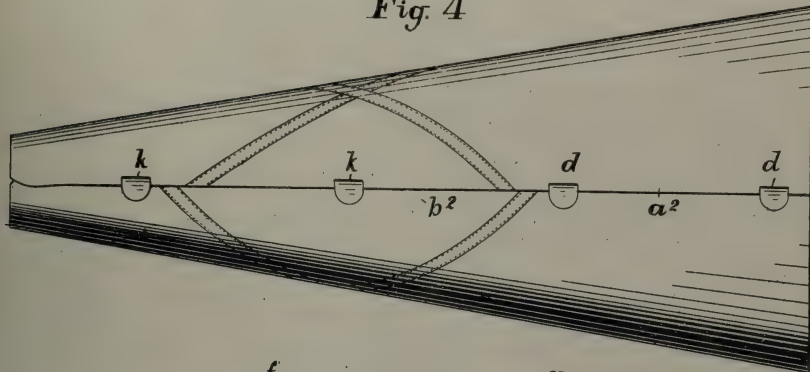
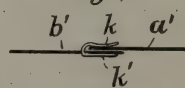


Fig. 7



Attest

M. E. Upham
F. E. Upham

Fig. 5

Inventor,
Major D. Porter;

By A. B. Upham,
His Attorney

UNITED STATES PATENT OFFICE.

MAJOR D. PORTER, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO THE INTERNATIONAL STYLOPHONE COMPANY, OF SAME PLACE.

COLLAPSIBLE ACOUSTIC HORN.

SPECIFICATION forming part of Letters Patent No. 648,994, dated May 8, 1900.

Application filed July 31, 1899. Serial No. 725,834. (No model.)

To all whom it may concern:

Be it known that I, MAJOR D. PORTER, a subject of the Queen of Great Britain, residing at New Haven, in the county of New Haven and State of Connecticut, have invented a new and useful Collapsible Acoustic Horn, of which the following is a full, clear, and exact description.

The object of this invention is the construction of a horn for general acoustic purposes, such as what is usually termed a "megaphone," or for phonographs and other talking-machines, which horn shall be capable of being folded into the smallest possible compass for greater convenience in transportation and storage, and yet can be immediately expanded into its perfect and normal condition for use. In accomplishing these results I form the horn from moderately-thin press-board, celluloid, or other material capable of ready, but not too easy, bending, and divide it longitudinally into two or more sections, with certain edges hinged together and the others provided with fastening devices easily engaged or disengaged. An ordinary hinged connection will not do for this purpose, however, as I have found from experiment, for the material being pliable only to a limited degree the hinges will become the apex of a somewhat-acute angle instead of an evenly-rounded curve. To remedy this defect in a simple and inexpensive manner, I form the hinge of some fabric or other pliable material and locate the same at some little distance back from the edge of one of the sections. By this means the outjutting edge serves as a fulcrum, which compels the material itself to bend instead of the hinge, and thereby gives to the horn the circular line in cross-section which is required.

Referring to the drawings forming part of this specification, Figure 1 is a perspective view of the horn embodying my invention. Fig. 2 is a transverse section of the same with the two sections thereof unfastened at one edge. Fig. 3 is a transverse section of said sections folded back to back. Fig. 4 is a side elevation of an improved form of my horn. Fig. 5 is a plan view of this latter horn laid flat. Fig. 6 is a perspective view of my preferred form of fastening for the edges of the

horn-sections, and Fig. 7 is a detail sectional view showing the manner in which the edges of the horn-sections are held by said fastening.

Turning to Fig. 1, it will be seen that the horn is composed of the two sections *a* and *b*, held together at the edges *a'* *b'* by a hinge *c*, preferably formed of fabric or leather. As shown, said edges overlap for a short distance, usually about half an inch, in order to preserve the true curve of the horn, as above set forth. For the same purpose the section edges *a*² *b*² are made to overlap for a similar distance and provided with fastenings *d* for securing them together. Such fastenings may be the common ball-and-socket devices used for gloves and purses, as indicated in the drawings. The hinge *c* is adapted to permit the two horn-sections to be folded back to back, as in Fig. 3, and thereby enable the same to lie perfectly flat.

In my preferred construction I divide the horn into six sections, as shown in Fig. 5, in order to enable the same to be folded into the smallest possible compass. The lines of severance for this purpose are three in number *f*, *g*, and *h*, *f* and *g* running parallel to each other and *h* at right angles with the others. The last of said lines of severance *h* is adapted to be folded in either direction, but the lines *f* *g* are hinged substantially like that of the construction illustrated in Figs. 1, 2, and 3.

The fastening devices for the edges *a*² *b*² are formed, as shown in Figs. 6 and 7, where the thin base *k'* is provided with the thin flattened hook *k*. Said base is affixed to the under side of the edge *b*², preferably by being stitched thereto, with the hook *k* reaching through a slit therein to the upper surface thereof. (See Fig. 7.) The mouth of this hook is arranged, as in Fig. 7, in order to receive the edge *a'* of the opposite section, and the opening is slightly constricted to receive said edge quite tightly, and thereby securely retain it.

In knocking down this horn the edge *a'* is first withdrawn from the grip of the fastenings *k*, then the sections 1 and 6 are folded over upon the sections 2 and 5, then the sections 3 and 4 are brought over upon the first-named ones, and, finally, the superposed sections 4, 5, and 6 are folded over upon the

combined sections 1, 2, and 3. The entire horn now occupies a space covering no more area than the single section 2, with a thickness equal to the six layers of the material composing the horn. Thus reduced in dimensions the horn can be packed in a very small compass and is hence capable of being carried from place to place in a small grip, a coat-pocket, or similarly-convenient receptacle. While this perfectly adapts the horn for use as a megaphone easy to be carried about and yet ready for use at a moment's notice, my preferable or most valued use for the same is in connection with phonographs. By packing this horn within the case arranged for the phonograph the entire talking-machine is complete, and yet occupies substantially no more space than the sounder mechanism alone. This is a most convenient arrangement for those giving phonograph entertainments at private parties or elsewhere necessitating the machine's being carried from place to place.

What I claim as my invention, and for which I desire to secure Letters Patent, is as follows, to wit:

1. In a collapsible horn, the combination of the sections formed of resilient material and hinged together along a substantially-longitudinal line, said hinge being adapted to permit said sections to be folded back to back but will compel flexure of the material itself when the free edges of the sections are brought together to form the horn, and fastening devices for said free edges, substantially as set forth.

2. In a collapsible horn, the combination of the sections formed of resilient material and hinged together along a substantially-longitudinal line, said hinge being formed of flexible material affixed to the edge of one section and a short distance back of the corresponding edge of the other section, whereby such overlapping edge is adapted to compel flexure of the material composing said sections when they are brought into the desired conical

form, and fastening devices for the free edges of said sections, substantially as and for the purpose set forth.

3. In a collapsible horn, the combination of the sections formed of resilient material and hinged together along a substantially-longitudinal line, and the fastening devices for the free edges of said sections, said fastening devices comprising the thin flat hooks having the bases affixed to the edge of one of said sections and adapted to receive and retain the edge of the other section, substantially as set forth.

4. In a collapsible horn, the combination of the plurality of sections formed of resilient material and shaped as shown, the flexible hinges securing the same together, and the fastening devices for the free edges of said sections, substantially as set forth.

5. In a collapsible horn, the combination of the sections formed of material capable of moderately-resisting flexure, the dividing-line between said sections being substantially longitudinal, and means for securing together the edges of said sections, such means being adapted to compel flexure of the sections themselves and thereby preserve the true conical shape of the horn, substantially as and for the purpose set forth.

6. In a collapsible horn, the combination of the sections formed of resilient material, the flexible hinges uniting said sections, and the fastening devices for securing together the exposed edges of said sections, two of the division-lines of said sections being parallel and substantially longitudinal therewith and the other at right angles to said parallel lines, substantially as set forth.

In testimony that I claim the foregoing invention I have hereunto set my hand this 14th day of June, 1899.

MAJOR D. PORTER.

Witnesses:

GUY H. HOLLIDAY,
A. B. UPHAM.

J. LANZ.

COMPOSITE METAL BEAM OR COLUMN.

(Application filed Jan. 12, 1900.)

(No Model.)

2 Sheets—Sheet 1.

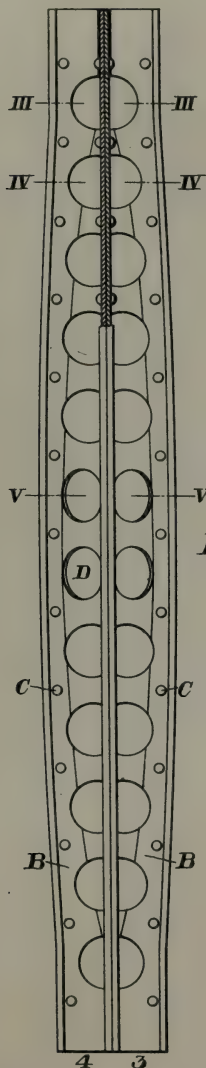


Fig. 1.

WITNESSES

Warren W. Swartz
H. M. Corwin

Fig. 2.

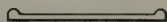


Fig. 3.

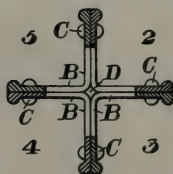


Fig. 4.

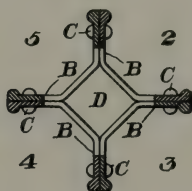
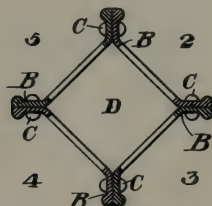


Fig. 5.



INVENTOR

John Lanz
by Bassett & Bassett
his Attorneys.

No. 651,368.

Patented June 12, 1900.

J. LANZ.

COMPOSITE METAL BEAM OR COLUMN.

(Application filed Jan. 12, 1900.)

(No Model.)

2 Sheets—Sheet 2.

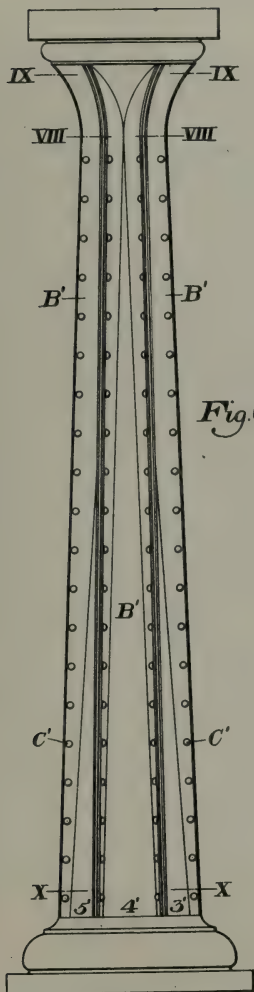


Fig. 6.

Fig. 7.

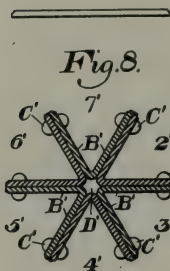


Fig. 8.

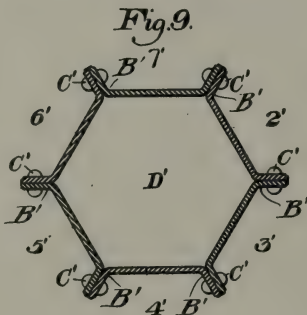


Fig. 9.

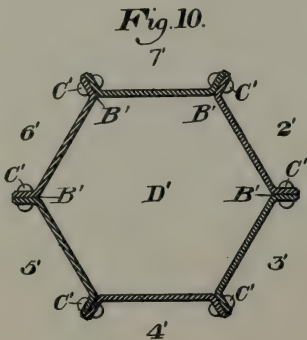


Fig. 10.

WITNESSES

Warren W. Swartz
H. M. Corbin

INVENTOR

John Lanz
by Bassett & Bassett
his Attorneys.

UNITED STATES PATENT OFFICE.

JOHN LANZ, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO MARY C. LANZ,
OF SAME PLACE.

COMPOSITE METAL BEAM OR COLUMN.

SPECIFICATION forming part of Letters Patent No. 851,368, dated June 12, 1900.

Application filed January 12, 1900. Serial No. 1,204. (No model.)

To all whom it may concern:

Be it known that I, JOHN LANZ, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Composite Metal Beams or Columns, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 shows in side elevation a composite metal bridge-beam constructed in accordance with my invention. Fig. 2 is an end view of the original form of one of the metal pieces of which the column is composed. Figs. 3, 4, and 5 are cross-sections, on a larger scale, on the lines III III, IV IV, and V V of Fig. 1, respectively. The figures on Sheet 2 show a modified construction. Fig. 6 is a side elevation of a composite column embodying my invention. Fig. 7 is an end view of one of the pieces of the column in its original shape. Figs. 8, 9, and 10 are horizontal cross-sections on the lines VIII VIII, IX IX, and X X, respectively, of Fig. 6, but on a larger scale.

The object of my invention is to provide a composite metal beam, brace, or column for use in bridge construction, buildings, &c., which shall be tapering or of varying diameter at different points of its length.

Referring to Sheet 1 of the drawings, in making my improved beam or column I take a number of metal plates or beams 2, 3, 4, and 5, which may consist either of flanged structural shapes or of unflanged metal plates, and the same being in angle form they are set with their angles in proximity and their flanges B B abutted against each other, preferably in line with radii of the beam or column and riveted together, as at C C, so as to constitute the composite beam shown in Fig. 1. In order to taper such column or beam, its elements 2 3 4 5 are shaped by pressing or otherwise so that the portions of the flanges B B which come in contact and through which the rivets pass vary in width conformably to the taper desired. The consequence is that the interior space D of the column or beam also varies in size, and the greater this space the greater will be the diameter of the composite column or beam. I am therefore enabled from metal pieces or plates of uniform size to make beams or columns having any desired taper or diameter

or variation of dimensions at different points. They may be made tapering from the bottom up, as in Fig. 6, or with a swell at the middle, as in Fig. 1. Indeed it will readily be seen that my improvement affords the greatest facility for shaping the column according to the particular use for which it is intended and for making it highly ornamental in appearance when desired.

In the figures on Sheet 2 of the drawings I show a column made of six metal plates 2' 3' 4' 5' 6' 7', which, as shown in Fig. 7, are originally unflanged, but which are pressed into angular form and are assembled with their flanges B' B' in contact and connected by rivets C' C', as above explained with reference to the figures on Sheet 1. By varying the width of the flanges B' the column is made of tapering form.

Within the scope of my invention as defined in the claims many changes may be made by the skilled mechanic, since

What I claim is—

1. A composite column, brace, or beam, made up of metal pieces of uniform width and angular form, having meeting flanges which are fastened together, said meeting flanges being varied in width at different points to vary the diameter of the column; substantially as described.

2. A composite metal beam or column made up of four pieces, 2, 3, 4, 5, of uniform width and angular form set with their angles in proximity to each other and with their flange portions fastened together, said flange portions being varied in width to impart to the beam or column varying diameters at different points; substantially as described.

3. A composite column, brace or beam made up of metal pieces of uniform width formed with suitable angles, having riveted flanges lying in a radius from the center of the column, said parallel flanges being varied in width to conform to the taper or diameter of the column desired at any point of its length; substantially as described.

In testimony whereof I have hereunto set my hand.

JOHN LANZ.

Witnesses:

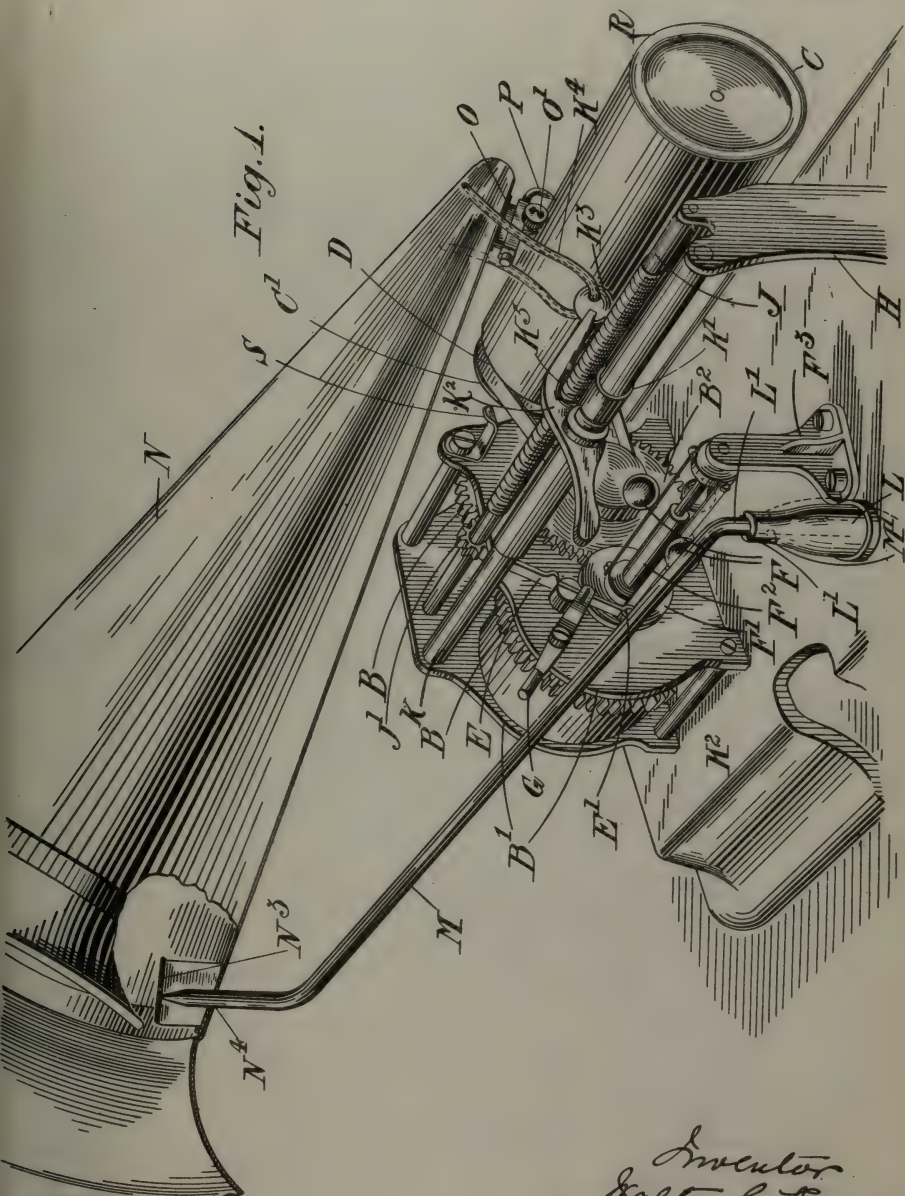
H. M. CORWIN,
GEO. B. BLEMING.

GRAPHOPHONE, PHONOGRAPH, OR THE LIKE.

(Application filed June 3, 1901.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses
 H. J. M. & Co.,
 J. J. M. & Co.,

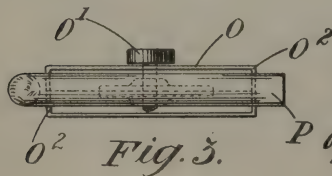
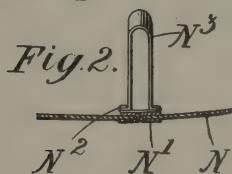
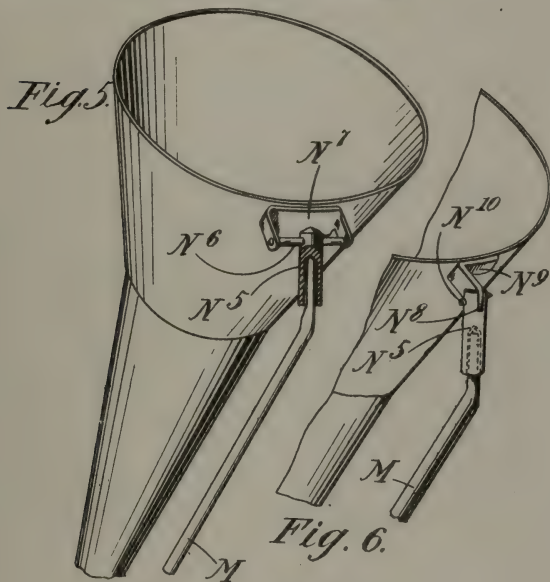
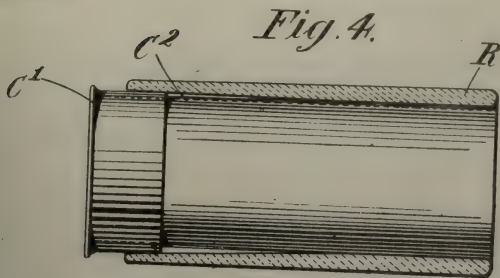
Inventor
 Walter C. Runge
 by Louis Freeman
 Attorneys

GRAPHOPHONE, PHONOGRAPH, OR THE LIKE.

(Application filed June 3, 1901.)

(No Model.)

2 Sheets—Sheet 2.



Inventor
Walter C. Runge
by
Solon Freeman
Attorneys.

Witnesses
H. J. Gillman
J. J. McCarthy

WALTER C. RUNGE, OF LONDON, ENGLAND.

GRAPHOPHONE, PHONOGRAPH, OR THE LIKE.

SPECIFICATION forming part of Letters Patent No. 692,363, dated February 4, 1902.

Application filed June 3, 1901. Serial No. 62,991. (No model.)

To all whom it may concern:

Be it known that I, WALTER C. RUNGE, a citizen of the United States of America, residing at London, England, have invented certain new and useful Improvements in or Relating to Graphophones, Phonographs, or the Like, (for which application has been made in Great Britain under No. 9,727, dated May 10, 1901,) of which the following is a specification.

This invention relates to graphophones, phonographs, and other like instruments for reproducing sounds from records, its object being the construction of an instrument which, while thoroughly efficient in operation, is simple and cheap to manufacture.

The improvements are primarily applicable to instruments which are not provided with a diaphragm at the small end of the trumpet, but have a stylus of hardened material attached to some part of the trumpet, the point of this stylus following the channels or grooves of the record in the well-known way. It is, however, to be understood that the improvements are not necessarily restricted to this particular type of instrument.

In the accompanying drawings, Figure 1 is a perspective view of one construction of graphophone embodying the improvements according to this invention. Figs. 2, 3, and 4 are detailed views showing portions of the instrument separately, and Figs. 5 and 6 are perspective views showing alternative constructions of another portion of the instrument.

Like letters indicate like parts throughout the drawings.

With reference first to Fig. 1, A is a base-plate, preferably of cast metal of considerable thickness, so that it may be heavy and rigid. Upon this base is fixed a motor, comprising in the example illustrated a train of wheels B, mounted between two plates B', one member B² of the train being preferably of hard fiber or other non-metallic material. From this motor a record-carrying mandrel C is driven by means of a belt D and a pulley C'. The train of wheels forming the motor is driven from a spring coiled in a barrel B³ and wound up when necessary, and the rate of rotation of the record-mandrel C may be regulated by a lever E, controlled by a screwed

rod or other mechanism. (Not shown in the drawings.) One end of this lever E is furnished with a brake-block E'—say of leather— 55 which presses against a disk F', connected to governors F, the action of the governors being to draw the disk F' away from the plate B' along a rod F², supported between that plate and a standard F³, secured to the base 60 A. A lever G is provided, by means of which the motor may be started and stopped.

Mounted free to turn between the outer plate B' and a standard H is a fine-threaded screw J, provided with a pinion J', which is 65 driven from one of the wheels B. Parallel to this screw J and also held between the plate B' and the standard H is a rod K, which forms a guide upon which a sleeve K' can travel and turn. This sleeve K' forms part of a pivoted guide-carrier comprising also a lever K², 70 a head K³, and a guide-fork K⁴, the arms of the latter being covered with rubber tubing or other soft or yielding material. Normally the guide-carrier K² K³ lies upon the fine- 75 threaded screw J, as shown in Fig. 1, and it is provided with a knife-edge K⁵ or otherwise adapted to engage with the thread of the screw J, so that when the latter rotates the guide-carrier may be caused to travel along 80 the bar K.

Upon the base-plate A is a socket L, having a central vertical hole which accommodates the end of a rod M, the pointed extremity of which serves as a pivot to support the 85 larger end of a sound-trumpet N. Slots L' are provided in the socket L, and pins M' upon the rod M engage with these slots when the rod M is in the socket, thus securing a definite position for the pivot of the sound- 90 trumpet.

The sound-trumpet N may be made of any suitable material, preferably non-metallic—such, for instance, as tough paper, thin fiber, or celluloid. When sheet material, such as 95 celluloid, is employed, the trumpet is conveniently made by providing the edges of the sheet with metal strips or grips, as shown at N' in Fig. 2, these strips being joined—say 100 by soldering. In some constructions only one strip is used, its edges being turned over, so as to grip the edges of the sheet material of which the trumpet is formed. To the strips N' inside the larger end of the trumpet is at-

tached a small clip N², forming a slide, into which the edges of a U-shaped piece of metal N³ are inserted. The pointed end of the rod M passes through a hole N⁴ and rests against the inside of the curved portion of the U-shaped piece N³. This U-shaped member is preferably formed so that the longitudinal portion which rests upon the point of the rod M is approximately horizontal, thus obviating the danger of any binding action taking place.

Near the smaller end of the trumpet N a socket O is provided to accommodate the stylus P, which may be of any hard material—say, for instance, glass rod or tubing. The socket O is preferably formed of spring metal and provided with a screw O', so that the stylus may be securely gripped. In the construction shown in detail in Fig. 3 the ends of the socket are turned in, as at O², so that the stylus is gripped by each end of the socket, the clamping-screw O' being in the middle.

In operation the larger end of the trumpet is pivoted, as above described, on its supporting-rod M, the smaller end passes between the arms of the fork K⁴ of the pivoted carrier, and the point of the stylus P rests upon a record-cylinder R, which is mounted friction-tight upon the mandrel C. This mandrel may be made, as shown in Fig. 4, of a piece of light tubing C², the diameter of which corresponds to that of the smaller end of the coned interior of the record R. At one end the tube C² is secured to a ring which fits the inside diameter of the larger end of the record R and conveniently forms part of the pulley C'. This ring may, if desired, be slightly coned in order to fit the adjacent portion of the interior of the record.

It is to be understood that the apparatus is so constructed that the point of the stylus P rests with a slight amount of pressure upon the record R. The guide-carrier K² K³ and fork K⁴ are not intended to take the weight of the trumpet, their function being primarily to act as a guide for the smaller end of the trumpet and prevent any danger of the point of the stylus quitting the grooves or channels in the record.

In order that the point of the stylus P may be withdrawn from contact with the record R or any adjacent part of the mechanism when the instrument is not in use, a small safety catch or bracket S is provided, attached to one of the plates B'. By depressing the back end of the carrier-lever K² the knife-edge K³ is disengaged from the screw J and the lower end of the trumpet, with the stylus P, is lifted in the guide-fork K⁴, and the head K³ is then allowed to rest in the catch S, in which position the stylus is out of contact with adjacent portions of the instrument.

The rest or catch is not necessarily in the form of the bracket S. It may, for example, be formed by causing the arms of the fork K⁴ to approach one another in a V shape below the portion receiving the trumpet, so that

when the back end of the lever K² is depressed this contracted or V-shaped part of the fork engages with, say, the back of the stylus-clip and lifts it, with the trumpet, clear of the record.

Figs. 5 and 6 show portions of sound-trumpets made according to an alternative construction of this invention. In each of these forms a pivoted socket N⁵ is provided, which accommodates the pointed end of the rod M. In Fig. 5 this socket is shown provided with a cross-arm N⁶, which is journaled in the downturned ends of a plate N⁷, attached to the trumpet. In the form shown in Fig. 6 the socket N⁵ is slotted, as at N⁸, and in this slot is a lug N⁹, secured to the trumpet, the lug and the slotted socket being pivotally connected by a pin N¹⁰.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a graphophone, the combination with the mandrel and record, of means for rotating the mandrel, a sound-trumpet and pivotal means for supporting its larger end, means for supporting its smaller end, a pivoted guide for the smaller end of the trumpet, means for feeding said guide, and means for rocking said guide on its pivot, substantially as described.

2. In a graphophone, the combination with the mandrel and record, of means for rotating the mandrel, a sound-trumpet and pivotal means for supporting its larger end, an adjustable socket attached to the smaller end of the trumpet, a stylus secured in said socket and adapted to rest upon the record and support the smaller end of the trumpet, a screw and means for rotating the same, a rod arranged parallel to said screw, a pivoted guide-carrier slidably mounted upon said rod and adapted to engage said screw, a fork carried by said guide-carrier and arranged to guide the smaller end of the trumpet, means for rocking said guide-carrier on its pivot to lift the smaller end of the trumpet and the stylus clear of the record, and means for holding the stylus out of contact with adjacent parts of the mechanism when the instrument is out of operation, substantially as described.

3. In a graphophone, the combination with the mandrel and record, of means for rotating the mandrel, a sound-trumpet and pivotal means for supporting the larger end of the same, a stylus connected to the trumpet and adapted to rest upon the record and support the smaller end of the trumpet, a pivoted guide for the smaller end of the trumpet, means for feeding said guide, and means for rocking it on its pivot to lift the stylus from the record, substantially as described.

4. In a graphophone, the combination with the mandrel and record, of means for rotating the mandrel, a sound-trumpet and pivotal means for supporting the larger end of the same, a stylus connected to the trumpet and adapted to rest upon the record and support the smaller end of the trumpet, a pivoted, slidably-mounted guide-carrier supporting a

guide for the trumpet, means for feeding said guide-carrier, and means for rocking it upon its pivot to lift the stylus from the record, substantially as described.

5. In a graphophone, the combination with the mandrel and record, of means for rotating the mandrel, a sound-trumpet, means for supporting the smaller end of the trumpet, and means for pivotally supporting the larger end of the trumpet, consisting of a vertical socket provided with vertical slots, a bent rod supported in said socket and provided with pins engaging said slots and also provided with a pointed extremity entering a hole in the side of the larger end of the trumpet, and a U-shaped piece over said hole within the larger end of the trumpet and arranged with a substantially horizontal longitudinal portion resting upon the point of the bent rod, substantially as described.

6. In a graphophone, the combination with the mandrel and record, of means for rotating the mandrel, a sound-trumpet, and means for supporting its larger end, consisting of a vertical socket provided with slots, a bent rod supported in said socket and provided with pins engaging said slots, said rod being also provided with a pointed extremity entering a hole in the side of the larger end of the trumpet, and a U-shaped piece over said hole within the larger end of the trumpet and arranged with a substantially horizontal longitudinal portion resting upon the point of the rod, an adjustable socket attached to the smaller end of the trumpet, a stylus secured therein and adapted to rest upon the record and support the smaller end of the trumpet, a screw rotatably mounted parallel to the axis of the record, means for rotating the same, a

pivoted guide-carrier slidably mounted upon a rod and adapted to engage said screw, a fork carried by said guide-carrier and arranged to guide the smaller end of the trumpet, means for rocking said guide-carrier on its pivot to lift the smaller end of the trumpet and the stylus clear of the record, and means for holding the stylus out of contact with adjacent parts of the mechanism when the instrument is out of operation, substantially as described.

7. In a graphophone, the combination with the mandrel and record, of means for rotating the mandrel, a sound-trumpet, means for supporting the larger end thereof, consisting of a socket provided with slots, a rod supported in said socket and engaging the slots said rod being provided with a pointed extremity entering a hole in the side of the larger portion of the trumpet, and a U-shaped piece within the trumpet having an approximately horizontal longitudinal portion resting upon the point of the rod, a stylus connected to the trumpet adapted to rest upon the record and support the smaller end of the trumpet, a screw, means for rotating the same, a pivoted, slidably-mounted guide-carrier adapted to engage said screw and provided with a fork to guide the smaller end of the trumpet, and means for rocking said carrier on its pivot to lift the stylus from the record, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WALTER C. RUNGE.

Witnesses:

HAROLD WADE,

HARRY B. BRIDGE.

C. McVEETY & J. F. FORD.

SHIP'S VENTILATOR.

Application filed July 10, 1901.

(No Model.)

FIG. 1.

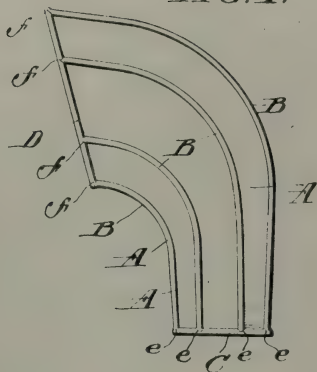


FIG. 4.

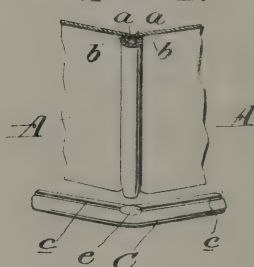


FIG. 2.

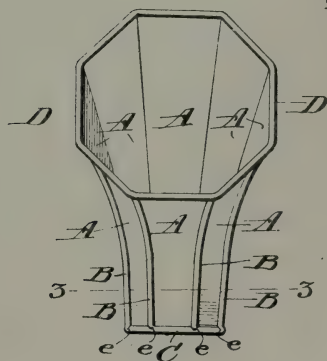
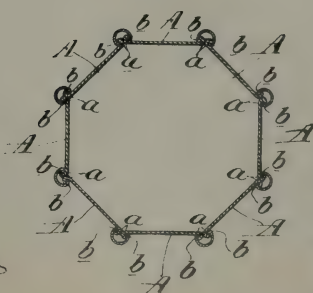


FIG. 3.



WITNESSES:

William J. Sterling
Richard H. Sharp

INVENTORS

Charles McVeety
John Ford
By their attorney
Walter H. Calhoun

UNITED STATES PATENT OFFICE.

CHARLES McVEETY AND JOHN F. FORD, OF PHILADELPHIA, PENNSYLVANIA.

SHIP'S VENTILATOR.

SPECIFICATION forming part of Letters Patent No. 699,928, dated May 13, 1902.

Application filed July 10, 1901. Serial No. 67,714. (No model.)

To all whom it may concern:

Be it known that we, CHARLES McVEETY and JOHN F. FORD, citizens of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Ships' Ventilators, of which the following is a specification.

Referring to the accompanying drawings, forming part of this specification, Figure 1 illustrates a side elevation of a ventilator constructed in accordance with our invention. Fig. 2 represents a front elevation of the same. Fig. 3 shows a horizontal section on the line 3-3 of Fig. 2; and Fig. 4 represents a detached perspective view of a portion of the ventilator, showing the manner of uniting the parts.

The object of our invention is to construct a ventilator of that type known as "ships' ventilators" in the simplest and most economical manner, the plates of which the ventilator is made being stamped out in one operation, requiring no delicate bending and fitting, as is required in other types of ships' ventilators.

Referring to the reference-letters of the drawings, A represent the plates, which are of varying width and provided at the sides with upturned portions *a*, forming grooves for the reception of the ribs B, which are in the form of split tubes, the inward-projecting portions *b* being adapted to engage the grooves of the plates A.

In Figs. 1, 2, and 3 of the drawings we have shown the ventilator constructed of eight plates or sections forming an octagonal figure in cross-sections and at the base and mouth. It will be understood, however, that any num-

ber of plates, as A, may be employed without departing from the scope of our invention. 40

As shown in Fig. 4, the plates A at the base and mouth of the ventilator are covered with beadings C and D, having slots *c* and *d* to receive the plates A and openings *e* and *f* to receive the ribs B. The beadings C and D are firmly-secured by brazing metal to the plates A and ribs B. 45

Having described our invention, what we claim, and desire to secure by Letters Patent, is—

1. A ventilator comprising in combination with a series of curved plates of gradually-increasing width having upturned edges forming grooves, a series of split tubes or ribs for engaging the grooves of said plates, and ribs arranged at the base and mouth having grooves engaging the plates and openings to receive the ribs substantially as specified. 50 55

2. A ventilator comprising a curved tapered pipe octagonal in cross-section composed of plates A, having upturned end forming grooves, ribs B in the form of split tubes for engaging and holding said plates in position, and ribs C and D arranged respectively at the base and mouth of the ventilator having slotted openings to receive the plates and openings for the ribs, substantially as specified. 60 65

In testimony whereof we affix our signatures in presence of two witnesses.

CHARLES McVEETY.
JOHN F. FORD.

Witnesses:
C. P. S. GARWOOD,
H. E. COUGHLIN.

No. 705,126.

Patented July 22, 1902.

G. OSTEN & W. P. SPALDING.

HORN FOR SOUND RECORDING AND REPRODUCING APPARATUS.

(Application filed June 27, 1901.)

(No Model.)

Fig. 6.

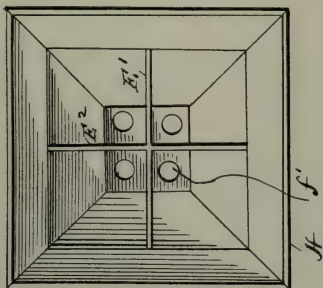


Fig. 3.

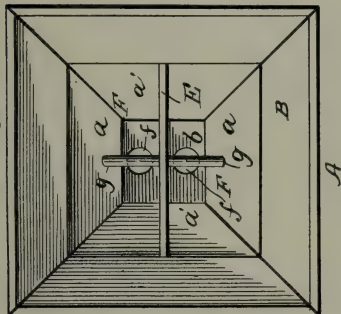


Fig. 1.

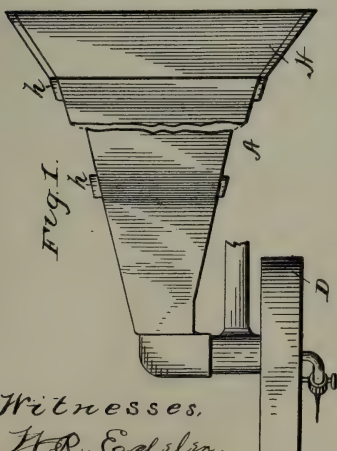


Fig. 4.



Fig. 5.

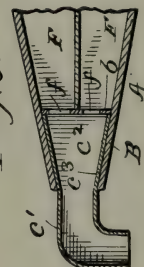
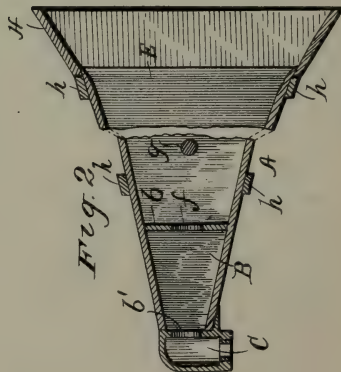


Fig. 2.



Witnesses.

H. R. Erdman,
Geo. Davis.

Inventors

George Osten and
William P. Spalding
by *Thos. Moore att.*

UNITED STATES PATENT OFFICE.

GEORGE OSTEN AND WILLIAM P. SPALDING, OF DENVER, COLORADO.

HORN FOR SOUND RECORDING AND REPRODUCING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 705,126, dated July 22, 1902.

Application filed June 27, 1901. Serial No. 66,301. (No model.)

To all whom it may concern:

Be it known that we, GEORGE OSTEN and WILLIAM P. SPALDING, residents of Denver, Colorado, have invented a new and useful Improvement in Horns for Sound Recording and Reproducing Apparatus, which invention is fully set forth in the following specification.

Our Patent No. 685,409, dated October 29, 1901, claims a multiple horn consisting of a plurality of small horns all communicating at their smaller ends with one and the same recorder or reproducer and a hood or bell common to all of the small horns and into which said small horns discharge or from which they receive the sounds at their larger ends.

Although the apparatus of our present invention, in its preferred form, includes the features of construction above referred to, as well as the transmitter described in said patent, the present invention is designed more particularly as an improvement upon the patented invention.

We have discovered that a large horn, of any suitable material, partitioned into a plurality of small horns by a partition or partitions, preferably of wood, acting as a sounding-board, gives improved results, and that still better results are obtained by the use of sound-posts in conjunction with the sounding-board partition or partitions. The manner in which we utilize these discoveries will be best understood by reference to the accompanying drawings, illustrating several embodiments of our invention, and wherein—

Figure 1 is a plan view showing a recorder or reproducer connected with the horn. Fig. 2 is a longitudinal sectional view of the horn. Fig. 3 is a view looking into the large end of the horn. Figs. 4 and 5 are views illustrating modifications of the elbow leading to the recorder or reproducer. Fig. 6 is a view looking into the larger end of a modified construction of horn.

A is the body of the horn, which, as shown, is made of four tapering thin wooden sides $a\ a'\ a''$, secured together along their edges, thus forming a body part of rectangular cross-section. The body part may, however, be made of circular, oval, or any other suitable shape in cross-section.

B is a distributing chamber or mouth at

the small end of the horn, bounded at one end by a transverse partition or wall b . At its smaller end mouth B communicates, through an opening b' , with a throat C, leading through a wooden elbow or short tube c , which is secured to the small end of the horn. Elbow or short tube c may be bent, as shown, or straight. At its outer end throat C communicates with a reproducer or recorder D, Fig. 1.

E is a sounding-board extending forward from partition b , secured at its side edges to the opposite sides $a'\ a''$ of body A and longitudinally dividing the interior of the latter into two small horns F F, which communicate with the distributing chamber or mouth B through openings ff in partition b on opposite sides of the sounding-board E.

$g\ g$ are two sound-posts interposed between the sounding-board E and the sides aa . They communicate vibrations from the sounding-board to the sides of the horn, and vice versa.

$h\ h$ are outside strips or ribs extending across sides $a'\ a''$ in a direction practically parallel to the sound-posts and acting to strengthen the tone and vibrations, as well as making the horn more durable. The sound-posts and ribs are of special importance, as they act in practically the same manner as do the sound-post and ribs of a violin. They improve the tone quality by softening and mellowing the same, at the same time increasing the carrying properties and distinctness of the sounds, particularly where the horn is made completely of wood. The metallic sound so common to sound recording and reproducing apparatus is effectually eliminated.

Any double effect that may otherwise be produced by the sounds coming from the two small horns F F is avoided by the action of the single bell or hood H, into which both of said small horns discharge, said hood causing the sounds coming from the separate small horns to blend together before they are finally discharged from the horn. As shown in the drawings, hood H is also made of wood and secured to the end edges of sides $a\ a'\ a''$.

As shown in Fig. 4, the elbow c' instead of being made of wood, as in Figs. 1 and 2, is made of brass or other suitable metal and has a flared or bell-shaped end c'' opening into the distributing-chamber E. Fig. 5 illustrates a somewhat-similar arrangement, the flared or

bell-shaped end c^3 of the elbow in this casing being of such length as to constitute a lining for the chamber B.

In the form of horn shown in Fig. 6 two sounding-boards $E^1 E^2$, disposed at right angles to each other longitudinally, divide the interior of the horn into four small horns, each communicating with the distributing-chamber, such as shown in Fig. 2, through an opening f^1 . As the sounding-boards bear against all of the sides of the horn, no sound-posts are necessary in this arrangement.

What we claim is—

1. In sound recording and reproducing instruments, the combination of a multiple horn comprising a plurality of small horns separated from each other by a sounding-board, with a sound recorder or reproducer in communication with said multiple horn.

2. A multiple horn comprising a plurality of small horns separated from each other by a sounding-board and a common distributing chamber or mouth with which the small horns communicate at their smaller ends.

3. A multiple horn comprising a wooden body part divided interiorly into a plurality of small horns by a wooden sounding-board.

4. A horn comprising a plurality of small horns separated from each other by a sounding-board, a common distributing chamber or mouth with which the small horns communicate at their small ends, and a hood or bell common to all of the small horns and into which said small horns discharge or from which they receive the sounds at their larger ends.

5. A horn comprising a body part adapted to communicate at its small end with a recorder or reproducer, a lateral partition in the body part forming a mouth or distributing-chamber at the smaller end of the horn,

and a longitudinally-extending sounding-board dividing the interior of the body part outside of the mouth into two small horns communicating with the mouth through openings in the lateral partition.

6. A horn comprising a body part adapted to communicate at its small end with a recorder or reproducer, a lateral partition in the body part forming a mouth or distributing-chamber at the smaller end of the horn, a longitudinally-extending sounding-board dividing the interior of the body part outside of the mouth into two small horns communicating with the mouth through openings in the lateral partition, and a hood or bell common to all of the small horns and into which said horns discharge or from which they receive the sounds at their larger ends.

7. A horn for use with apparatus for recording and reproducing sounds having a sounding-board longitudinally disposed therein.

8. A horn for use with apparatus for recording and reproducing sounds having a sounding-board longitudinally disposed therein and a sound-post interposed between the sounding-board and side wall of the horn.

9. A wooden horn for use with apparatus for recording and reproducing sounds having a wooden sounding-board longitudinally disposed therein and a sound-post interposed between the sounding-board and side wall of the horn.

In testimony whereof we have signed this specification in the presence of two subscribing witnesses.

GEORGE OSTEN.

WILLIAM P. SPALDING.

Witnesses:

W. A. RICE,

L. GOLDMAN.

No. 738,342.

PATENTED SEPT. 8, 1903.

A. S. MARTEN:
INTERCHANGEABLE SOUND AMPLIFYING MEANS FOR TALKING
OR SOUND REPRODUCING MACHINES.

APPLICATION FILED APR. 7, 1902.

NO MODEL.

Fig. 1.

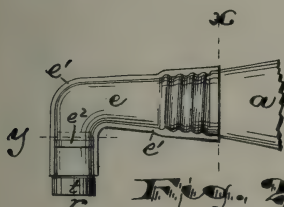
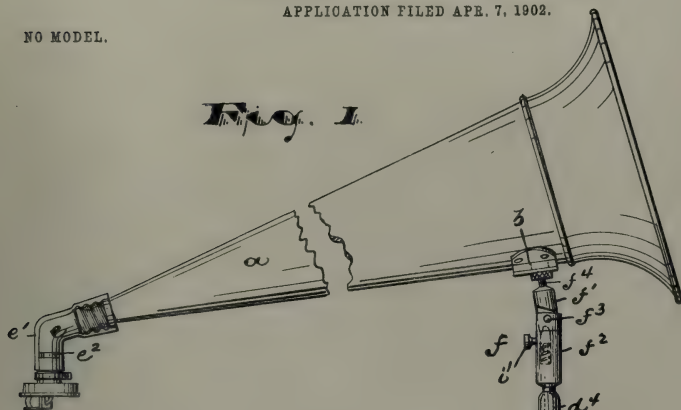


Fig. 2.



Fig. 3.



Fig. 5.



Fig. 6.

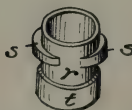


Fig. 7.

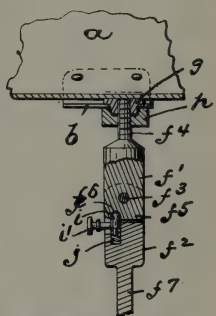


Fig. 4.

WITNESSES:

Harry Krug
Russell M. Everett

INVENTOR

Albert S. Marten,
BY
Drake & Co.
ATTORNEYS

UNITED STATES PATENT OFFICE. 300

ALBERT S. MARTEN, OF EAST ORANGE, NEW JERSEY.

INTERCHANGEABLE SOUND-AMPLIFYING MEANS FOR TALKING OR SOUND-REPRODUCING MACHINES.

SPECIFICATION forming part of Letters Patent No. 738,342, dated September 8, 1903.

Application filed April 7, 1902. Serial No. 101,648. (No model.)

To all whom it may concern:

Be it known that I, ALBERT S. MARTEN, a citizen of the United States, residing at East Orange, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Interchangeable Sound-Amplifying Means for Talking or Sound-Reproducing Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

This invention relates to certain improvements in that class of sound-amplifying connections for phonospheres, phonographs, graphophones, gramophones, and similar sound recording and reproducing machines illustrated in the application filed in the United States Patent Office January 24, 1902, Serial No. 91,032, the objects of the present improvements being to increase the convenience with which interchanges of the horn and talking-machines can be effected to facilitate construction and secure a more efficient operation of the parts and to obtain other advantages and results, some of which may be more fully and specifically referred to hereinafter in connection with the description of the working parts.

The invention consists in the improved interchangeable sound-amplifying means for talking or sound-reproducing machines and in the arrangements and combinations of parts of the same, all substantially as will be hereinafter set forth, and finally embraced in the clauses of the claim.

Referring to the accompanying drawings, in which like letters of reference indicate corresponding parts in each of the several figures, Figure 1 is an elevation showing a horn supported upon a stand, said horn being separably attached to the diaphragm-box or speaker of a sound-reproducing machine. Fig. 2 is a detail showing the small end of the horn, on which is a tubular metallic connection having a rubber or other elastic connection inserted therein. Fig. 3 is an end view of the same. Fig. 4 shows in detail an upper extension of the stand; and Figs. 5

and 6 are sectional views taken at lines *x* and *y*, respectively. Fig. 7 is a detail view of a certain elastic washer.

In said drawings, *a* indicates the horn, which is of the construction described in my said prior application, being provided at its small end with a screw-thread and near its large end with a socket *b*, adapted to receive the vertical center post of the stand *d*. Separably attached to the said small end of the horn is a short rigid metallic tube *e*, threaded in correspondence with the threads on the horn, and thus adapted to be screwed firmly and tightly to the horn, so that there will be no looseness at the joint conducive to vibration and an interference with proper sound reproductions. Said metallic tube *e* is also separable and independent from the diaphragm-box or speaker.

The stand *d* is preferably of the folding type, having legs *d'*, braces *d''*, and the center-post *d'''*, the latter being in telescopic sections. The center-post is provided at the top with a socket *d'* for a separable extension *f*, the latter comprising pieces *f'* *f''*, hinged together, the hinge-pin being shown at *f'''* in Figs. 1 and 4. At the top of the upper section *f'* the same is threaded, as at *f''*, and provided with clamp-plates *g* *h*, one to enter the socket and the other to clamp the parts in rigid immovable relation, the second being preferably a finger-nut, threaded to properly engage the threads *f''*. At the lower end of the extension section or part *f'* the same is provided with a stop-bearing *f'''* to engage the lower section or part *f''* and limit the pivotal movement of the upper member *f'*, so that it will stop when it arrives at a position of vertical alinement with the lower section *f''* and the post *d'''*. The said lower end of the section or part *f'* is also provided at *f''* with a socket to receive the projecting end of a latch-bolt *i*, arranged in a spring-chamber formed in the section or part *f''*. Below said latch-bolt a spring *j* is arranged in said chamber to throw the latch-bolt into its locked position. The latch-bolt has a lateral finger-piece *k*, by which it can be pressed down against the spring *j* to release the section or part *f'* to permit the turning of the member or part *f'* to a horizontal position and the horn to a vertical position, as hereinafter described. At the lower end of the part or

section f^2 the same is reduced in diameter to form a leg f^2 to enter the socket d^4 , where it may be removably secured or allowed to rest free to be withdrawn at will.

5 By uncoupling the small end of the horn and pressing down upon the finger-piece i the horn will assume a vertical position because of the arrangement of the socket described, the small end of the horn overbalancing the large end and the latter lying uppermost. The vertical arrangement of the horn on the stand permits the horn to be set aside in a corner, where it will not occupy much floor-space and without detaching said horn from its stand, the bell thus lying free from the floor away from danger of injury.

The construction described, taken in connection with separable coupling-tubes suited to the machine with which the horn is to be used, enables a rigid connection to be made with the machine and yet permits of a quick detachment without removing the horn from the stand. The tubular connection preferred for the disk-machines and the phonosphere is angularly formed and pressed in half-sections from sheet metal, each section having a flange e' extending around the angle from one end of the tube to the other, one of the flanges being wider than the other, and thus adapted to be doubled over the other to hold the sections together, as shown in Fig. 5. At one end of each section of the tube e the metal is impressed with screw-threads which correspond, so that when the sections are joined the threads will be continuous spirals suited to receive the threads of the horn. At the opposite end of the tube the sections are indented or impressed to form hollow outwardly-projecting bosses e^2 . The cavities formed on the inside of the bent tube are adapted to receive stay ribs or lugs s , cast or formed on the periphery of an elastic washer r . Said washer fits closely within the end of the tube e and is held therein by the ribs or lugs s , which are adapted to spring into place in the cavities when the washer is forced into the tube. The elastic washer at one end is formed with an outward annular rib t on its periphery, which forms a shoulder against which the end of the metallic tube abuts. By this construction the tube e can be fitted closely upon the tubular extension of the speaker or diaphragm-box without danger of looseness due to variations in diameter of said tubular extensions or the interference with proper sound reproductions because of such looseness.

To change the horn from a phonograph to a phonosphere, for example, it becomes only necessary to withdraw the tubular extension suited to the phonograph from the speaker or diaphragm-box of said phonograph, unscrew the said tubular connection, the horn being

held at the desired horizontal position to facilitate the work, then apply the angular and threaded connection e by screwing it upon the horn, and finally pushing the cushion-like or elastic washer thereof upon the speaker of the phonosphere, thus enabling the one horn to serve with either of the various talking-machines.

Having thus described the invention, what I claim as new is—

1. The combination with the horn and speaker or diaphragm-box, of a tubular metallic connection separable from the horn and having at its end distant from the horn an elastic washer having a detent holding said washer within said connection when withdrawing the same from the diaphragm-box, and adapted to engage the said diaphragm-box, substantially as set forth.

2. The combination with the horn having a threaded small end, of a tubular connection screwed at one end on said horn and thereby removably fixed against movement in the direction of the longitudinal axis of the said horn and at the opposite end having an elastic rubber washer fitted therein and adapted to receive the speaker or diaphragm-box, substantially as set forth.

3. The combination with the horn having a threaded small end, of a tubular connection screwed on said small end, and having at its end opposite that receiving the horn, an elastic washer, the connection being interiorly indented to form a hollow recess and the washer being provided with lugs to enter said hollow recess, substantially as set forth.

4. The combination with the horn, speaker, diaphragm-box and stand, of a rigid, angular, metallic tube, interposed between said horn and box and separable from both said horn and said box, said tube being in sections, flanged and joined together at their edges, substantially as set forth.

5. The combination with the horn, diaphragm-box and stand, of a coupling-tube adapted to be secured to the horn and provided with means to resist longitudinal movement, or movement both inward and outward in the direction of the longitudinal axis of the horn from the said horn, and having an india-rubber washer secured in the end thereof opposite that having said means for resisting said longitudinal movement and adapted to closely fit speakers or diaphragm-boxes of varying diameters, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 29th day of March, 1902.

ALBERT S. MARTEN.

Witnesses:

CHARLES H. PELL,
C. B. PITNEY.

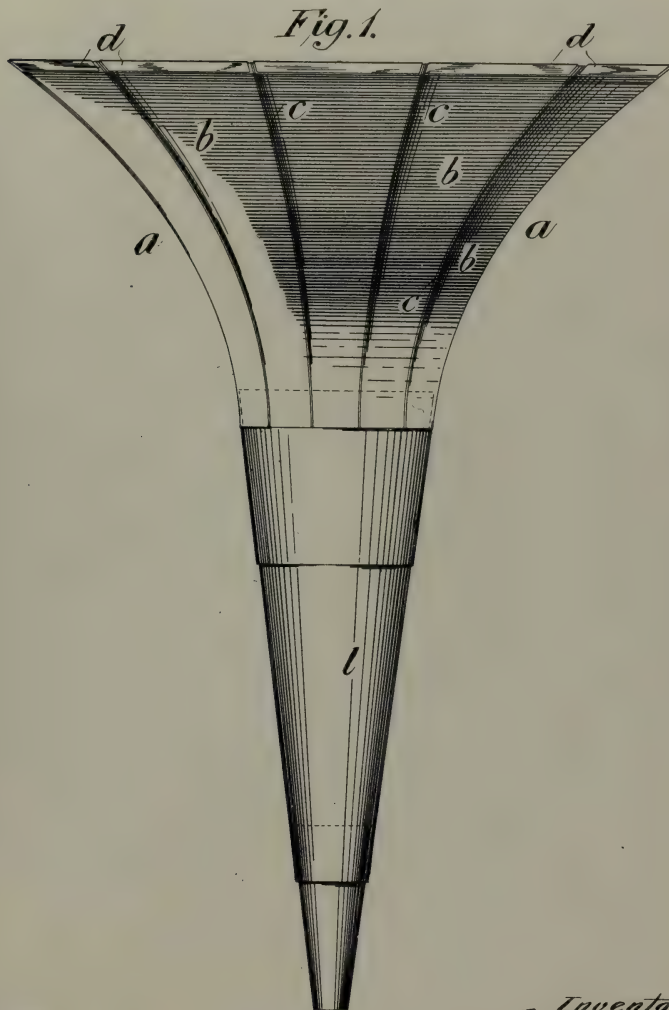
G. H. VILLY.

HORN FOR PHONOGRAPHS, EAR TRUMPETS, &c.

APPLICATION FILED DEC. 8, 1902.

NO MODEL.

3 SHEETS—SHEET 1.



Witnesses:
L. Hilton
A. Veazie

Inventor:
Gustave H. Villy
 By *H. Blaisson & Co*
 Attorneys

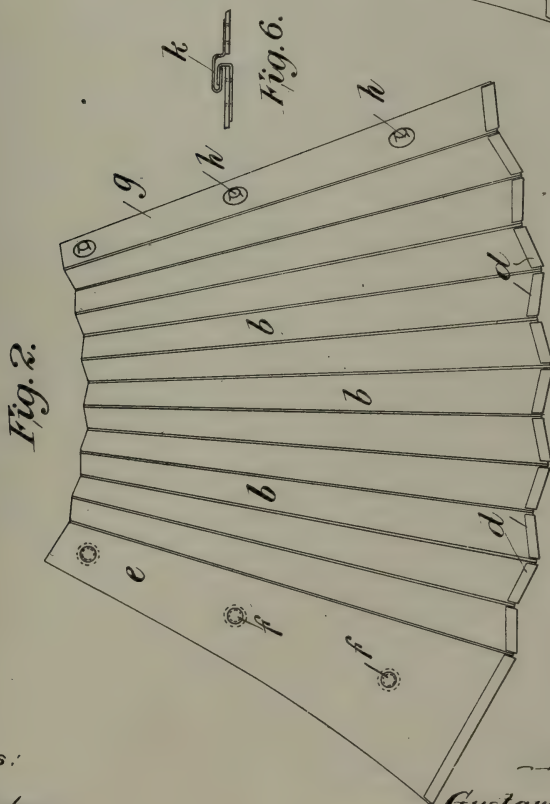
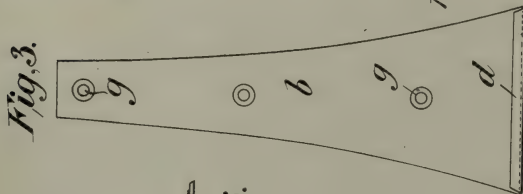
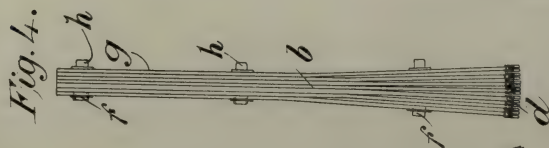
G. H. VILLY.

HORN FOR PHONOGRAPHS, EAR TRUMPETS, &c.

APPLICATION FILED DEC. 8, 1902.

NO MODEL.

3 SHEETS—SHEET 2.



Witnesses:

L. Hilton
A. Veazie

Inventor:

Gustave H. Villy.

By H. B. Wilson & Co.

Attorneys.

No. 739,954.

PATENTED SEPT. 29, 1903.

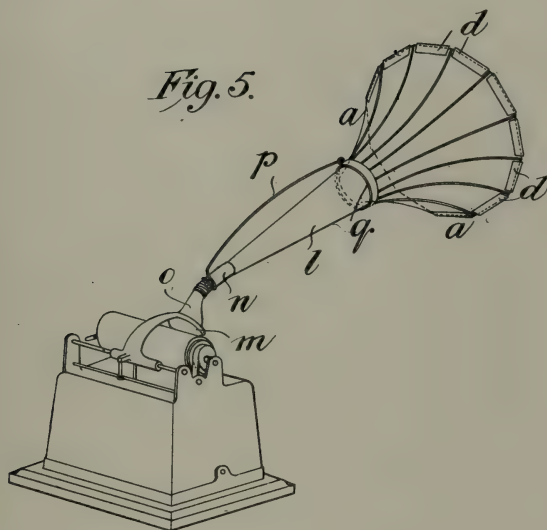
G. H. VILLY.

HORN FOR PHONOGRAPHS, EAR TRUMPETS, &c.

APPLICATION FILED DEC. 8, 1902.

NO MODEL.

3 SHEETS—SHEET 3.



Witnesses

Hilton
Veazie

Inventor.

Gustave H. Villy.

By

H. W. Wilson & Co

Attorneys

UNITED STATES PATENT OFFICE.

GUSTAVE HARMAN VILLY, OF MANCHESTER, ENGLAND.

HORN FOR PHONOGRAPHS, EAR-TRUMPETS, &c.

SPECIFICATION forming part of Letters Patent No. 739,954, dated September 29, 1903.

Application filed December 8, 1902. Serial No. 134,413. (No model.)

To all whom it may concern:

Be it known that I, GUSTAVE HARMAN VILLY, a subject of the King of Great Britain and Ireland, residing at 5 Longford Place, Longsight, Manchester, in the county of Lancaster, England, have invented certain new and useful Improvements in Connection with Horns for Phonographs, Ear Instruments, and for Like Purposes, (for which I have made application for Letters Patent in Great Britain, No. 20,146, and dated 15th day of September, 1902,) of which the following is a specification.

This invention relates to improvements in connection with horns or trumpet-like sound distributors or collectors for use upon phonographs, gramophones, and other like instruments, and also for ear-trumpets, fog-horns, and other sound distributing and collecting devices, the object being to provide a horn or trumpet-like device which can be folded when not in use, so as to be capable of ready transportation and for placing within the case of the phonograph or in the pocket of the user when it is to be applied to an ear instrument or the like.

The accompanying drawings represent one form of the invention.

Figure 1 is an elevation of the complete or erected horn. Figs. 2, 3, and 4 are detail views illustrating the manner in which the horn can be collapsed or folded. Fig. 5 is a perspective view illustrating one convenient application of the improved horn to a phonograph. Fig. 6 is a detail view on an enlarged scale.

In carrying my invention into effect in one convenient manner when making my folding horn for use, particularly in connection with a phonograph or like instrument, I make the end *a* of trumpet-like or curved configuration with an enlarged outer end and a smaller end at the interior of the conoidal-like form. I make this enlarged and trumpet-like device by employing a series of strips *b*, of paper, wood, linen, or other preferably flexible material, the foundations of which I prefer to make of linen or the like, so as to form a hinge-like connection *c* between each of the strips, the members *b* of which I arrange so that while lying close together when extended

there is a dividing-line between them about which they can be folded upon the base of linen or the like connecting-web upon which the paper or other material is mounted. The longitudinal hinged edges *c* of the flexible segments or sectors *b* are curved in such manner that although the segments when opened out cannot lie in the same plane they can either be folded together in a zigzag manner, so as to lie parallel to one another, as shown in Figs. 2 to 4, or extended by springing or buckling into the requisite trumpet or bell-like form, as shown in Figs. 1 and 5. The angles formed by the meeting of the hinged segments when extended form, as it were, ribs, giving rigidity to the trumpet form. The outer ends of the segmental-like strips I prefer to protect by a bent or turned-over edging *d* of metal, making the connection rigid by pressing a portion of the strip of metal or other binding material into the edge of the paper or the like foundation.

Upon the extreme member *e* of the series of strips *b* thus formed into one band, I provide eyelets for other clip-like devices for enabling snap projections *h* on the opposite end strip *g* to be engaged therewith and when thus engaged to form a completed trumpet-like sound-distributor.

Instead of arranging eyelets or hook-like clips upon the outer members of the series of strips I may make one to engage with the other by forming a bead-like connection or flange *k* upon one member, into which the corresponding projecting or engaging portions of the other may enter, as shown in Fig. 6. When providing for an extension and a long funnel-like carrier for the built-up trumpet-like end *a* to engage with, I sometimes make a conical tube *l*, the enlarged end of which engages with the inner end of the trumpet-terminal *a*, while the smaller end of the cone engages with the receiver *m* of the phonograph or enters into the rubber or other tubular or flexible connection which may be employed for use upon any particular instrument. I prefer to make this extended or carrying member *l* for the collapsible trumpet from paper or other suitable material built up in a similar manner to that hereinbefore described to my collapsible end, or the

cone may be made in a short length in one piece, or it may be made telescopic when so desired.

When providing for a flexible connection at the extreme end of the cone *l*, I attach a length of rubber or the like tubing *n*, which I bind with metal or other band at the end for the purpose of inserting it upon the funnel *o* of the phonograph-reproducer, and I stiffen the combination trumpet and funnel with flexible end by providing one or more bars *p* of metal or the like stiffeners which support the funnel by means of elastic or other connections *q*, arranged upon the cone end and suspended from the projecting stiffening hook or members *p*, carried from the metal end or binder of the flexible tube *n*.

When constructing a funnel or tube for an ear-trumpet or for a fog or speaking horn or the like, I employ the same method of building up the segments to form the expanding surface, modifying the arrangement of the inner end to suit the connection that is to be made therewith, so that when the trumpet is in use it can be extended and a large outer area exposed for the collection of sound and when not in use it can be folded, each segment upon the other, so as to occupy but little space—that is to say, a trumpet such as illustrated in Figs. 1 to 4 would be suitable as an ear-trumpet.

I am aware that it has hitherto been proposed to form conical or pyramidal horns from cardboard provided with a linen foundation; but such horns have been made up from a single flat scored sheet or from a number of flat triangular strips having straight edges. Such horns could be developed or laid out upon a flat surface. Owing to their formation if such horns were made collapsible they would have to be sustained in their conical form by additional sustaining means, or if they were made self-sustaining they could not be made collapsible. In contradistinction to this my collapsible horn could not be made up from a single flat sheet, as each strip has to be made with curved edges, and when the strips are flexibly secured together at such curved edges the whole or complete surface so formed cannot be laid out or developed on a flat surface. My horn, owing to the curvature of the edges of the strips, is self-sustaining and requires no additional stiffening or sustaining devices, although when it is desired to collapse the horn this may be effected by forcibly straightening and folding the strips one against the other in the manner hereinbefore described with reference to Figs. 2, 3, and 4. The horn when erected offers a decided resistance to such straightening or folding sufficient to render it self-sustaining against all ordinary shocks liable to be encountered; but it is found that when one strip has been forcibly straightened or folded

against another the equilibrium of the trumpet is destroyed and the whole may be easily collapsed.

I do not limit the application of my invention to any particular method of building up the segments or to any special curve or configuration of the same, and I vary the method of jointing and stiffening them to suit the material from which the strips are constructed and the foundation or base fabric upon which the flexible material forming the strips is secured.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A collapsible but self-sustained phonograph-horn, ear-trumpet or the like comprised of a number of flexible strips having curved meeting edges substantially as set forth.

2. A collapsible but self-sustained phonograph-horn, ear-trumpet or the like comprising a number of flexible strips having curved meeting edges and mounted on a flexible foundation, substantially as and for the purposes hereinbefore set forth.

3. A collapsible but self-sustained phonograph-horn, ear-trumpet or the like comprising a number of flexible strips having curved meeting edges, a flexible foundation for said strips and means for detachably securing the two extreme strips together, substantially as set forth.

4. A collapsible but self-sustained phonograph-horn, ear-trumpet or the like comprising a number of flexible strips having curved meeting edges, flexible connections between such edges and protecting means on the outer exposed edges, substantially as set forth.

5. A phonograph-horn, ear-trumpet or the like comprising a rigid conical tube and a collapsible trumpet-shaped mouth the latter being made up of a number of flexible strips having curved meeting edges, and flexible connections at such edges, substantially as hereinbefore set forth.

6. A horn of the class described comprising a rigid conical tube, and a collapsible trumpet-shaped mouth made up of a number of flexible strips having curved meeting edges, said mouth being connected to said rigid conical tube, substantially as described.

7. A horn of the class described comprising a rigid conical tube, and a collapsible trumpet-shaped mouth made up of a number of flexible strips having curved meeting edges, said mouth being telescopically connected to said conical tube, substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

GUSTAVE HARMAN VILLY.

Witnesses:

DORA VILLY,
V. A. B. HUGHES.

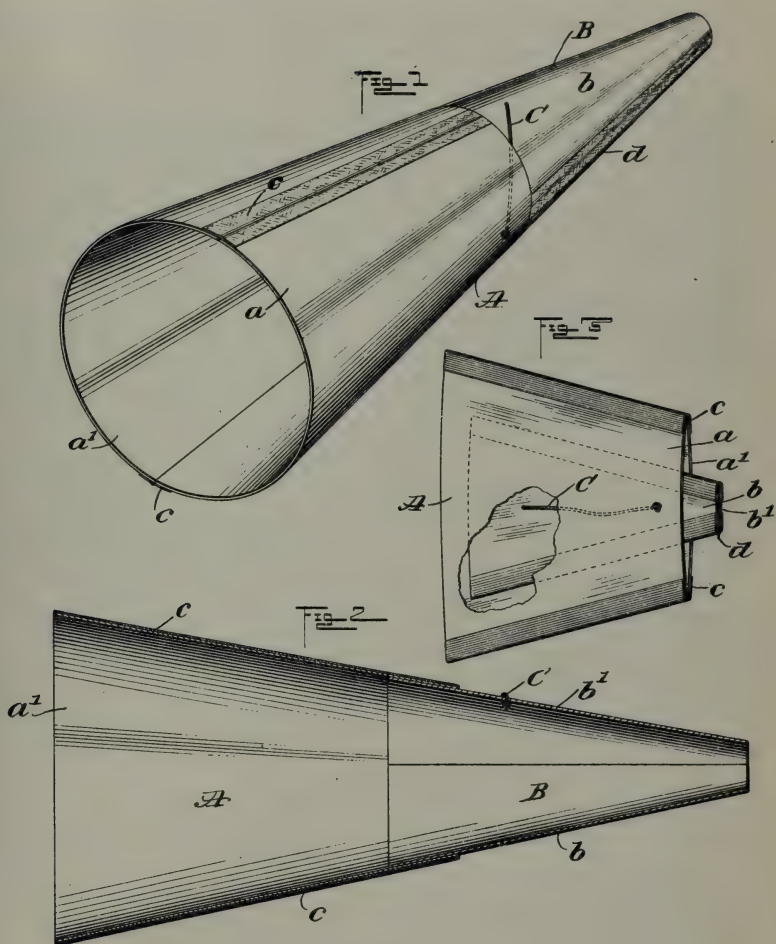
No. 748,969.

PATENTED JAN. 5, 1904.

C. MELVILLE.
MEGAPHONE.

APPLICATION FILED JULY 24, 1903.

NO MODEL.



WITNESSES:

*W. J. Bernhof**W. J. Bernhof*

INVENTOR

Colin Melville

BY

Munn & Co

ATTORNEYS

UNITED STATES PATENT OFFICE.

COLIN MELVILLE, OF NEW YORK, N. Y.

MEGAPHONE.

SPECIFICATION forming part of Letters Patent No. 748,969, dated January 5, 1904.

Application filed July 24, 1903. Serial No. 166,828. (No model.)

To all whom it may concern:

Be it known that I, COLIN MELVILLE, a citizen of the United States, and a resident of the city of New York, (City Island, borough of the Bronx,) in the county and State of New York, have invented a new and Improved Megaphone, of which the following is a full, clear, and exact description.

My invention relates to improvements in megaphones; and the object that I have in view is to produce a collapsible article which may be folded compactly to facilitate storage and transportation and at the same time may be easily and quickly adjusted in a way which prevents collapsing of its parts, so that the device can be used like an ordinary rigid megaphone.

Further objects and advantages of the invention will appear in the course of the subsequent description and the novelty will be defined by the annexed claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a perspective view of my collapsible megaphone, showing the sections thereof adjusted in position for service. Fig. 2 is a longitudinal sectional elevation through the megaphone in the position shown by Fig. 1; and Fig. 3 is a plan view, partly broken away, showing the sections of the megaphone adjusted one within the other and collapsed or folded compactly for storage and transportation.

As shown by the drawings, the megaphone consists of a plurality of sections, as A B, which are of collapsible construction in order that the section B may fold compactly within the section A. (See Fig. 3.) The section A consists of two members or pieces *a a'*, which are united at their edges by pliable bindings *c*, whereby the parts *a a'* are permitted to fold laterally into a flat condition. The other section, B, consists of parts or members *b b'*, united by pliable bindings *d*, so that the section B may fold laterally into a compact form, as shown by Fig. 3. The sections A B are of conical or tapered form, and the section B is smaller than the section A, in which it is adapted to fit telescopically, as shown by Fig. 2.

Each section may have its parts made of heavy cardboard, linoleum, leather, or any similar material, and the parts of each section are held together by bindings *c* or *d*, of fabric or suitable material. Each section has a tendency to collapse or fold, and the section B is adapted to slide within the section A when it is desired to pack or carry the article. The displacement or relative movement of the sections is limited by the employment of a pliable connection, which is represented in the drawings in the form of a cord, tape, or the like at C. One end of this limiting cord or tape is attached to the section B, while its other end is fastened to the section A in a suitable way, and this limiting-cord is of such length as to permit the section B to have an endwise and turning movement within the section A.

Assuming that the article is in its collapsed condition, as in Fig. 3, the section B is drawn outward and given a quarter-turn in order to bring its joints in a position at right angles to the joints of the sections A, the cord C limiting the movement of the sections relatively to one another. The turning movement of the section B is advantageous, because it brings the two sections into such positions that the tendency of one to collapse is counteracted by the other section, whereby the sections are held in their proper positions when it is desired to use the article in the ordinary way. To fold the megaphone, the sections (or one of them) are turned so as to bring the joints into the same plane, whereupon the sections are free to collapse, and the section B can be slid into the section A within the limit of the length of the cord or tape C.

I do not desire to strictly confine myself to the employment of any particular number of sections nor to the described means for limiting the relative movement of the sections nor to any particular material for making the sections, because these details may be varied within wide limits by a skilled constructor.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A megaphone consisting of collapsible

sections foldable one within the other and fitted telescopically together.

2. In a megaphone, a tapering member formed of sections of resilient material hinged together longitudinally at diametrically opposite sides, and means for holding said tapering member in circular form, said sections being adapted to normally fold into flat engagement with each other when released from said holding means.

3. A megaphone consisting of a plurality of tapering members each formed of sections longitudinally hinged together, each member being collapsible, and one member being turnable with respect to the other, whereby the tendency of the members to collapse is counteracted by the engagement of one member with the other.

4. A megaphone consisting of tapering telescopic sections each being provided with diametrically opposite longitudinal joints and

collapsible, one section being turnable with respect to the other.

5. A megaphone consisting of tapering sections hinged together longitudinally to fold one upon the other, the sections being fitted telescopically one to the other, and means for limiting the relative movement of said sections.

6. A megaphone, consisting of tapering telescopic sections, each formed of two pieces of resilient material provided with longitudinal hinges diametrically opposite each other, the hinges of two adjoining sections being in planes at right angles to each other.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

COLIN MELVILLE.

Witnesses:

J. P. DAVIS,
JNO. M. RITTER.

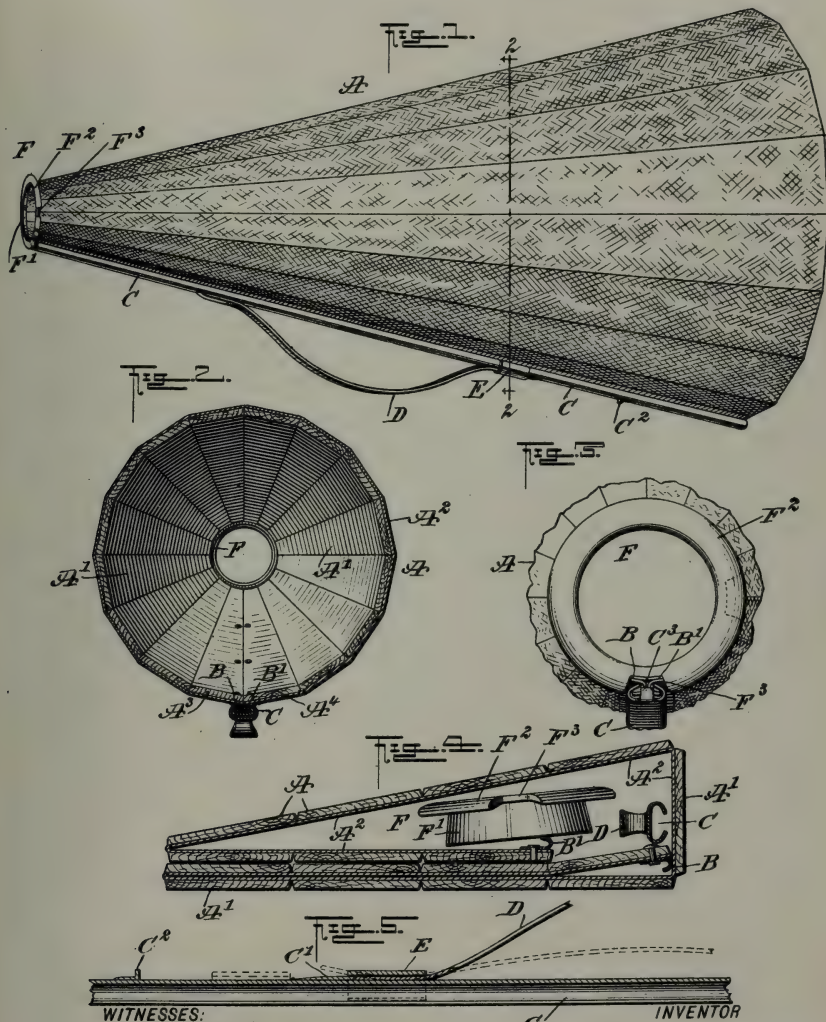
No. 763,808.

PATENTED JUNE 28, 1904.

H. STURGES.
COLLAPSIBLE MEGAPHONE.

APPLICATION FILED FEB. 2, 1904.

NO MODEL.



WITNESSES:

Geo. C. Cheney
Reed. H. Foster

INVENTOR

Hollister Sturges

BY

Mumford

ATTORNEYS

HOLLISTER STURGES, OF NEW YORK, N. Y.

COLLAPSIBLE MEGAPHONE.

SPECIFICATION forming part of Letters Patent No. 763,808, dated June 28, 1904.

Application filed February 2, 1904. Serial No. 191,666. (No model.)

To all whom it may concern.

Be it known that I, HOLLISTER STURGES, a citizen of the United States, and a resident of the city of New York, borough of Manhattan, in the county and State of New York, have invented a new and Improved Collapsible Megaphone, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved megaphone adapted to be collapsed and folded into comparatively little space for convenient storing aboard ship or other place and adapted to be quickly and readily extended for use.

The invention consists of novel features and parts and combinations of the same, as will be more fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a perspective view of the improvement in position for use. Fig. 2 is a transverse section of the same on the line 2 2 of Fig. 1. Fig. 3 is an enlarged end elevation of the improvement. Fig. 4 is an enlarged longitudinal sectional view of the collapsed body, with the locking-slide and mouthpiece shown in elevation; and Fig. 5 is an enlarged longitudinal sectional elevation of the locking-slide and the means for securing the free end of the handle to the slide.

The body A of the collapsible megaphone when extended for use (see Fig. 1) is approximately in the shape of a split truncated cone or many-sided pyramid and is formed of slats A', connected with each other by a fabric A², such as canvas, which fabric forms a cover for the slats and also hinges to hingedly connect the sides of the slats with each other to allow convenient folding of the slats when the body is collapsed. (See Fig. 4.)

The adjacent slats A³ and A⁴ along the split of the body A are provided on the outside with longitudinally-extending guideways B and B', preferably made of metal and adapted to be engaged by a locking-slide C for securely fastening the adjacent edges of the slats A³ and A⁴

together to securely hold the body A in an extended position—that is, in the form of a truncated cone or many-sided pyramid. As shown in the drawings, the side edges of the slats are somewhat beveled, so that when the body A is extended for use the edges of adjacent slats fit snugly together to produce a strong and durable body A.

As shown in Fig. 1, the locking-slide C and the guideways B and B' extend throughout the length of the body A, and on the said slide C is secured one end of a handle D, preferably made of spring metal, adapted to be taken hold of by the operator for using the megaphone for its legitimate purpose. The free end of the handle D is adapted to be engaged by a sleeve E, slidably held on the slide C to firmly lock the free end of the handle in place at the time the said free end abuts against a projection or lug C', formed integrally on the locking-slide C, as plainly indicated in Fig. 5. When the slide C is withdrawn from the guideways B and B' and the body A is collapsed and folded, then the handle D can also be folded snugly against the side of the slide C by the operator moving the sleeve E outwardly to release the free end of the handle D and allow the latter to lie flat against the slide C. In order to prevent the sleeve E from accidental disengagement from the slide C, a stop C² is provided, against which the sleeve E can abut when not in use.

The mouthpiece F for the megaphone is in the form of a beveled ring F', fitting the inside surface of the body A at the apex end, and the said ring F' is provided at its apex end with an outwardly-extending flange F², adapted to abut against the ends of the slats, so as to prevent the mouth of the user of the megaphone from coming in contact with the rough edges of the slats and the canvas. By having the outer side of the ring beveled to correspond to the conical shape of the body A it is evident that the ring F' is securely held in place on the megaphone when the latter is extended or set up; but the mouthpiece can be turned in the apex end of the body A to move a notch F³ in the flange F² in or out of register with the guideways B and B' and the slide C. When the notch F³ is in regis-

ter with the guideways B and B' and the slide C, then the latter can be placed in position on the guideways or removed therefrom; but when the slide C is in position in the guideways and the ring is turned so as to move the notch F³ out of register with the end of the slide and the guideways then the slide C is held against accidental displacement on the guideways B and B'. The slide C is provided with an inturned lug C³ (see Fig. 3) at the apex end of the megaphone for the lug to abut against the ends of the guideways to prevent the slide C from moving out of position in an outward direction on the guideways B and B'.

When the megaphone is extended, as shown in Fig. 1, and it is desired to collapse the megaphone, then the operator first turns the mouthpiece F until the notch F³ is in register with the guideways B and B' and the slide C, and then the latter is withdrawn from the guideways through the notch F³ to unlock the body A to allow of folding the same, as indicated in Fig. 4, at the same time allowing removal of the mouthpiece F and storing the same in the folded body A, as indicated in Fig. 4. The slide C may also be placed within the folded body A, as shown in Fig. 4, it being understood that after the slide is removed the handle D is unlocked and folded to take up little room on the slide C, as previously explained.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

35 1. A collapsible megaphone comprising a body in the form of a split truncated cone, a ring in the apex end of the body, and means for locking and unlocking the sides of the cone at its split, said means being adapted to bring the edges of the cone at its split, into abutting engagement with each other, as set forth.

2. A collapsible megaphone comprising a body in the form of a split truncated cone and made of slats, hingedly connected with each other, the slats at the split being provided with longitudinal guideways, and a locking-slide for removably engaging the said guideways, as set forth.

3. A collapsible megaphone comprising a body in the form of a split truncated cone and made of slats, hingedly connected with each other, the slats at the split being provided

with longitudinal guideways, a locking-slide for removably engaging the said guideways, and a handle on the said locking-slide, as set forth.

4. A collapsible megaphone comprising a body in the form of a split truncated cone and made of slats, hingedly connected with each other, the slats at the split being provided with longitudinal guideways, a locking-slide for removably engaging the said guideways, a flexible handle attached at one end to the said slide, and means on the slide for engaging the free end of the said handle, as set forth.

5. A collapsible megaphone comprising a body in the form of a split truncated cone and made of slats, hingedly connected with each other, the slats at the split being provided with longitudinal guideways, a locking-slide for removably engaging the said guideways, a flexible handle attached at one end to the said slide, a lug on the said slide, for the free end of the handle to abut against, and a sleeve on the slide, for engaging the free end of the handle, to lock the same in place against the lug, as set forth.

6. A collapsible megaphone comprising a body in the form of a split truncated cone, made in foldable sections, a locking device for locking the sides of the split together, and a mouthpiece consisting of a ring provided with beveled sides fitting the inside of the said body at the apex and a flange on the said ring, fitting the apex edge of the body, as set forth.

7. A collapsible megaphone comprising a body in the form of a split truncated cone, made in foldable sections, a locking device for locking the sides of the split together, and a mouthpiece consisting of a ring provided with beveled sides fitting the inside of the said body at the apex and a flange on the said ring, fitting the apex edge of the body, the flange having a cut-out portion for the passage of the movable member of the said locking device, as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HOLLISTER STURGES.

Witnesses:

THEO. G. HOSTER,
EVERARD BOLTON MARSHALL.

E. A. SCHOETTEL.
PROCESS OF MANUFACTURING HORNS.

APPLICATION FILED FEB. 18, 1904.

NO MODEL.

Fig. 1.

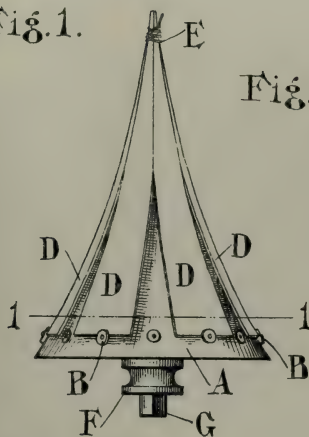


Fig. 5.

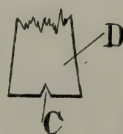


Fig. 3.

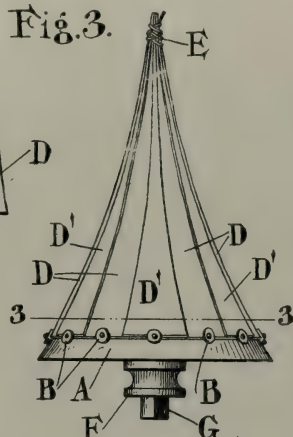


Fig. 2.

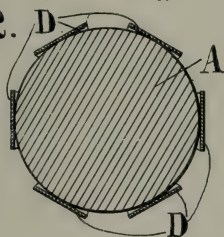


Fig. 4.

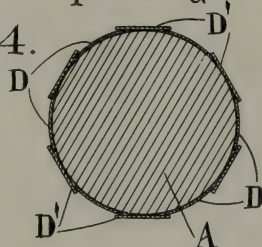
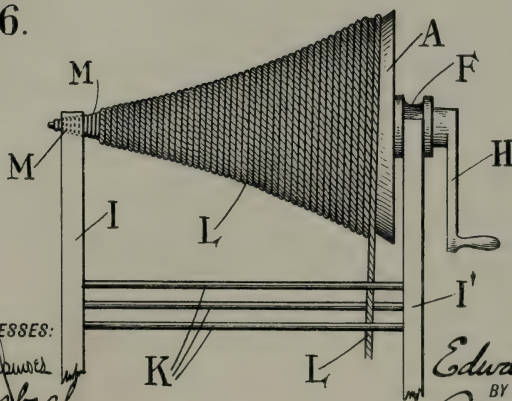


Fig. 6.



WITNESSES:

Lindley Schepner
F. M. Donbach

INVENTOR

Edward A. Schoettel
BY
Phillips Abbott
ATTORNEY

UNITED STATES PATENT OFFICE.

EDWARD A. SCHOETTEL, OF BROOKLYN, NEW YORK, ASSIGNOR TO
EMMA J. SCHOETTEL, OF BROOKLYN, NEW YORK.

PROCESS OF MANUFACTURING HORNS.

SPECIFICATION forming part of Letters Patent No. 769,410, dated September 6, 1904.

Application filed February 18, 1904. Serial No. 194,161. (No model.)

To all whom it may concern:

Be it known that I, EDWARD A. SCHOETTEL, a citizen of the United States, and a resident of the borough of Brooklyn, county of Kings, city and State of New York, have invented a new and useful Process or Method for the Manufacture of Megaphone and Similar Horns, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, in which—

Figure 1 illustrates an elevation of the former or block on which the horn is made, showing some of the pieces or gores of paper or similar material in position thereon which, with others, are to form the horn. Fig. 2 illustrates an end view of that which is shown in Fig. 1 on the line 1 1 of that view. Fig. 3 illustrates an elevation similar to that shown in Fig. 1, showing, however, all of the pieces or gores also of material which, with the others shown, are to form the horn, in place on the former, covering the spaces between the longer gores. Fig. 4 illustrates an end view of that which is shown in Fig. 3, taken on the line 3 3 of that figure. Fig. 5 illustrates a detail showing the notch in the lower end of the gores, whereby they are held in position on the former. Fig. 6 illustrates an elevation of the apparatus whereby the gores are all drawn forcibly down to position and held there until dried.

A represents the conical or tapering former or block upon which the horn is made up from a series of tapered or gore-shaped pieces D D' D' of paper or similar material. The former may be and usually is made of wood, although any other suitable material may be used. Its exterior shape determines the shape of the horn.

B B are a series of catches, which may be like very large headed nails, driven into or fastened to the former at stated intervals near its larger end, as shown, in such positions that a notch C (see Fig. 5) made in the lower edge of each of the gores will fit under the appropriate nail, and thereby that end of the gore will be held against lateral movement during the process of applying them upon the former.

The upper ends of the gores (see Figs. 1

and 2) are confined partly by glue or other adhesive material applied to them where they overlap and also by a cord E, which is tightly tied about their upper ends, where they are applied to the former.

F is a round bearing, preferably grooved, as shown, fastened centrally on the base of the former, and outside of the journal part is a squared projecting part G, adapted to receive a crank H. (See Fig. 6.)

I and I' are two vertical bars constituting a frame, which is suitably braced and provided with suitable tension devices, such as the cross-bars K K. At the upper end of the bar I there is an open-ended semicircular notch or journal, adapted to receive the small end of the former with the tied ends of the gores thereon, and on the upper end of the other bar, I', there is another open-ended journal, adapted to receive the bearing F.

L is a small rope, which may be about the size of an ordinary clothes-line or somewhat larger, if preferred, and it is of such length as to make successive coils, preferably touching each other, the whole length of the gores and preferably one or two additional coils. I prefer that at the smaller end of the horn a few feet of material, such as pigskin or belt lacing M, be substituted for the rope, but attached to it, because such material, being more pliant and self-adjusting than the rope, will more satisfactorily draw the small and relatively stiff edges of the narrower part of the gores into position than the rope will, and also some part of the pigskin lacing necessarily, or at least preferably, rests within the journal, being wound tightly thereon under the strain of the crank in such manner that the former revolves on it, and I have found that the pressure of this operation on the pliant lacing secures a better finish to the small end of the horn than if the rope were used and also that the lacing will not wear or fray out as much as the rope will.

The operation is as follows: After the gores have been applied to the former in the manner stated the former is lifted from its primary support and placed in the winding-frame. (Shown in Fig. 6.) Then the crank is applied

to the squared boss G, and the end of the lacing M is firmly attached to the small end of the former, preferably just at the ends of the gores or slightly beyond them. Then one operative forcibly turns the crank which another directs and applies tension upon the rope and lacing. In this way the strain may be uniform or varied, as circumstances require and as observed, during the winding operation to draw all the edges of the several gores from their angular position (shown in Figs. 2 and 4) into the requisite circular form to make a handsomely-finished and uniformly-shaped product. If the glue or other adhesive material has at all set or chilled before the forming pressure is applied to the gores, then I subject the same to a blast of steam, which will soften the adhesive material and render all parts pliant, so that they will readily respond to the pressure exerted by the lacing and rope, or by the rope alone if the lacing is not used.

Obviously lacing may be used throughout, if preferred, and any equivalent material other than the rope or lacing may be substituted therefor.

After the compression or forming of the gores has been finished by winding the rope or its equivalent on them, as shown, then the end of the rope is suitably fastened and the whole set aside to dry in its then condition. Meantime other horns may be made on other formers. When dry, the rope and lacing are unwound and removed, and then the edges of the gores are sandpapered down and the horn is finished in the usual way.

It will be obvious to those who are familiar with this art that many modifications may be made in the details of construction and operation of the parts. The former may be turned by machinery, and the flexible rope binder may be manipulated in a variety of ways, all, however, within the spirit and embodying the essentials of my process, which consists in the application upon the gores of the horn while they are held in position and while the adhesive material is yet soft of the pressure of a flexible binding device adapted to apply equal or varying pressures, as desired, upon each and every part of the gores, irrespective of the shape and size of the horn and of the material of which it is composed.

I claim—

1. The process described in the manufacture of horns, consisting in cutting the material of which the horn is to be made into gore-shaped pieces, detachably attaching said pieces to an interior former, whereby circumferential movement of one relative to the other is prevented, the edges of said pieces overlapping, applying adhesive material between the overlapping edges, revolving the interior former and the pieces with it while the adhesive material is still soft and subjecting the parts composing the horn to the continuous

and forcible pressure of a single flexible and elastic binding device which is wound upon them under tension as the former revolves.

2. The process described in the manufacture of horns, consisting in cutting the material of which the horn is to be made into gore-shaped pieces, detachably attaching said pieces to an interior former, whereby circumferential movement of one relative to the other is prevented, the edges of said pieces overlapping, applying adhesive material between the overlapping edges, revolving the interior former and the pieces with it while the adhesive material is still soft and subjecting the parts composing the horn to the continuous and forcible pressure of a single flexible and elastic binding device, which is wound upon them under tension as the former revolves, the winding of the binding device upon the gore-shaped pieces commencing at the small end of the horn and progressing toward the larger end thereof.

3. The process described in the manufacture of horns, consisting in cutting the material of which the horn is to be made into gore-shaped pieces, detachably attaching said pieces to an interior former, whereby circumferential movement of one relative to the other is prevented, the edges of said pieces overlapping, applying adhesive material between the overlapping edges and winding under tension continuously applied always in the same direction upon the parts composing the body of the horn, while they are supported in position upon the former, a flexible and elastic binding device, which is wound upon the said pieces commencing at the small end and extending toward the larger end, said binding device being provided with means whereby its tension may be varied at will.

4. The process described in the manufacture of horns, consisting in cutting the material of which the horn is to be made into gore-shaped pieces, detachably attaching said pieces to an interior former, whereby circumferential movement of one relative to the other is prevented, the edges of said pieces overlapping, softening adhesive material previously applied between the overlapping edges by the application of steam thereto, revolving the interior former and the pieces with it while the adhesive material is plastic and adhesive and subjecting the parts composing the horn to the continuous and forcible pressure of a single flexible and elastic binding device which is wound upon them under tension as the former revolves.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EDWARD A. SCHOETTEL.

Witnesses:

FLORA M. DONSACH,

ALFRED G. SCHOETTEL.

No. 770,024.

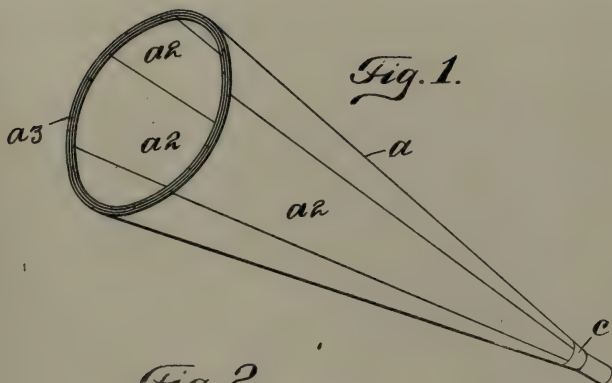
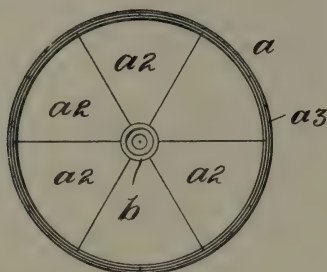
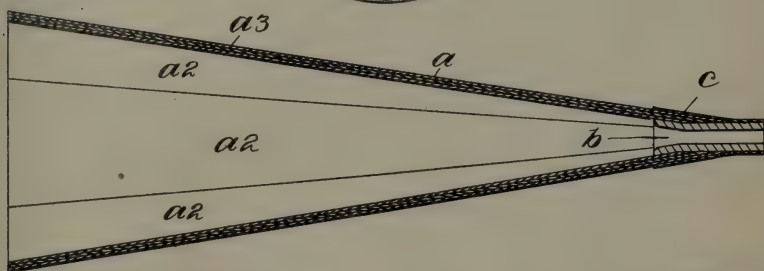
PATENTED SEPT. 13, 1904.

B. RUGGIERO & G. BONGIORNO.

HORN FOR PHONOGRAPHS OR SIMILAR MACHINES.

APPLICATION FILED JUNE 24, 1904.

NO MODEL.

*Fig. 2.**Fig. 3.*

WITNESSES

A. J. Mattingly
E. E. Mulhearn

INVENTORS

Bartolo Ruggiero
Gaetano Bongiorno

BY

Edgar Tatel & Co.
 ATTORNEYS

UNITED STATES PATENT OFFICE.

BARTOLO RUGGIERO AND GAETANO BONGIORNO, OF BROOKLYN,
NEW YORK.

HORN FOR PHONOGRAPHS OR SIMILAR MACHINES.

SPECIFICATION forming part of Letters Patent No. 770,024, dated September 13, 1904.

Application filed June 24, 1904. Serial No. 213,916. (No model.)

To all whom it may concern:

Be it known that we, BARTOLO RUGGIERO, a citizen of the United States, and GAETANO BONGIORNO, a subject of the King of Italy, both residing in Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Horns for Phonographic or Similar Machines, of which the following is a specification, such as will enable those skilled in the art to which it appertains to make and use the same.

This invention relates to horns for phonographic and similar machines; and the object thereof is to provide a horn for machines of this class which will do away with the mechanical, vibratory, and metallic sound usually produced in the operation of such machines and also produce a full, even, and continuous volume of sound, in which the articulation will be clear, full, and distinct.

The invention is fully disclosed in the following specification, of which the accompanying drawings form a part, in which the separate parts of our improvement are designated by suitable reference characters in each of the views, and in which—

Figure 1 is a perspective view of our improved phonographic horn; Fig. 2, an end view thereof, and Fig. 3 a longitudinal section.

In the practice of our invention we provide a horn *a*, composed of separate layers of longitudinally-arranged strips *a*¹, said strips being preferably composed of wood or similar fibrous material. In the construction shown three of the separate layers are employed, as shown at *a*², and each of said layers is composed of six of the separate and longitudinally-arranged strips *a*¹. These separate layers *a*², which make up the horn *a*, may be secured together at the edges by glue or in any suitable way, and in practice said layers are preferably formed separately and inserted into each other, or the outer layer is first formed and the second and third layers inserted thereinto, and in this operation the outer surface of the second and third layers are covered with any suitable glue or adhesive material, and the

separate parts or layers of the horn are thus securely held together and make up, in effect, a single homogeneous construction. Instead of forming the separate layers separately and inserting one within another, as hereinbefore described, the inner layer may first be formed and the separate longitudinal strips of the second layer secured thereon, after which the separate longitudinal strips of the outer layer may be secured in position, and in either event the separate layers are so connected as to break the joints thereof, as clearly shown in Figs. 1 and 2.

In the smaller end of the horn *a* is secured a short tube *b*, which is larger at its outer than its inner end, and this tube is also composed of wood or similar fibrous material and is intended to strengthen the smaller end of the horn, and in practice I secure on the smaller end of the horn a sleeve *c*, which is preferably composed of metal and which is also intended to give strength to the smaller end of the horn and facilitate the attachment of the horn to the machine without injury to the smaller end of the horn.

It will be understood that the general form of the horn may be the same as other devices of this class, and the larger end thereof may be bell-shaped, if desired, and the connections of the horn with the machine is made in the usual manner.

By means of our improvement we provide a horn for the purpose specified which will produce a constant and continuous volume of sound, in which the articulation will be clear, full, and distinct and which will not produce the mechanical, vibratory, and metallic sound usually produced by instruments of this class as heretofore constructed.

Our invention is not limited to the exact form of the horn, nor to the number of the separate layers of material employed in the construction thereof, nor to the number of longitudinal strips in each layer, and various changes in and modifications of the construction herein described may be made without departing from the spirit of our invention or sacrificing its advantages.

Having fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

5 1. A horn for phonographic and similar machines, composed of separate layers of fibrous material, each of said layers being composed of separate longitudinal strips arranged so as to break joints, substantially as shown and described.

10 2. A horn for phonographic and similar machines, composed of separate layers of fibrous material, each of said layers being composed of separate longitudinal strips arranged so as

to break joints, and the smaller end of the horn being provided with a tube of fibrous material which is secured therein, substantially as shown and described. 15

In testimony that we claim the foregoing as our invention we have signed our names, in presence of the subscribing witnesses, this 22d 20 day of June, 1904.

BARTOLO RUGGIERO.
GAETANO BONGIORNO.

Witnesses:

C. J. KLEIN,
C. E. MULREANY.

[Second Edition.]

N^o 22,612

A.D. 1899

(Under International Convention.)

Date claimed for Patent under Sect. 103 of Act,
being date of first Foreign Application (in } 15th Apr., 1899
United States),

Date of Application (in the United Kingdom), 13th Nov., 1899

Complete Specification Left, 13th Nov., 1899—Accepted, 17th Feb., 1900

COMPLETE SPECIFICATION.

Improvements in Graphophones.

I, GEORGE L. HOGAN, of 109, Equitable Building, Baltimore, in the State of Maryland, United States of America, Gentleman, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

5 My invention relates to improvements in graphophones or devices designed for reproducing articulate speech or other sounds recorded on phonograms or sound-writings.

The object of my invention is to provide a device or mechanism of a simple, cheap, and durable construction by means of which such phonograms or sound-
10 writings may be accurately and perfectly audibly produced without any attendant disagreeable scraping, grating, or other interfering noise resulting from the action of the mechanism.

My invention consists of a sound-generator in the form of a trumpet of conical shape made of a tough quality of paper, vulcanized fibre, or other material and
15 having a rigidly attached small rod of hard material, the extremity of which is brought to a fine point and bent so as to fit in the spiral grooves of the phonogram-writing and pivoting said trumpet.

The invention is illustrated in the accompanying drawings, in which—

20 Figure 1 is a sectional view of a portion of the base on which the cylinder is mounted.

Figure 2 is a top view of the machine complete.

Figure 3 is a sectional view of the point end of the trumpet on a somewhat larger scale.

Figure 4 is a side elevation of the complete machine.

25 Figure 5 is a detail view of part of the trumpet, showing the manner of joining its edges.

Figure 6 is a detail view of the adjustable cushion.

The large end of the trumpet A rests on a stud b, where it is pivoted loosely on a vertical rod c, extending from the stud upward. This gives the point end
30 of the trumpet a free lateral swinging movement. The trumpet has on its lower side a hole c¹ and on its upper side a slot c², through which the rod passes. The longitudinal slot c² affords a slight range of up- and down movement to the point end. A hard downward-curved point d is attached to the small end of

[Price 8d.]

Hogan's Improvements in Graphophones.

the trumpet, and said point rests on the phonogram-cylinder, and as the same is revolved the spiral groove of the writing serves as the means to carry the point *d* from one end to the other of the cylinder, the trumpet swinging on its pivot *c*. No other feeding or guiding device is required.

The hard point *d* may be attached to any portion of the wall of the sounding-trumpet and yield good results. I have, however, provided a novel means of attachment that will now be described. The hard point *d* is preferably held in a socket *e*, from which it may be removed when desired. The socket is fixed on the end of a rod *f* and has position in front of the point end *g* of the trumpet. This rod extends along below the small end of the trumpet, and its end *f*¹ is attached to the side of the trumpet some distance back from the said point end. This manner of locating the hard point *d* and connecting it with the side wall of the trumpet, but back from its point end *g*, produces the best results.

The trumpet is made of a sheet of tough paper or thin indurated fibre, and each of the two edges of this material that come together when the sheet is folded to the cone form are first bordered by a thin sheet-metal strip folded longitudinally, as shown at *h* in Figure 5. This metal strip encloses the sheet edge like a clip and extends from the large end to the point end. The two metal strips are abutted together and joined by solder. This metal strip not only serves as a means of joining the sheet edges, but also serves to augment and improve the sounding qualities of the trumpet.

It is a feature of improvement in this invention to attach the end *f*¹ of the rod to which the hard point is secured to the said metal joint-strips *h*. Thereby the metal strips become the conductor for the sound vibrations, which latter are evenly distributed all along the wall of the trumpet. The pivot-hole *c*¹, heretofore referred to is through this metal strip.

The phonogram-cylinder *I* is held in position by two bearings *j* *j*¹ and a horizontal axis *k*. The bearings are slotted out instead of being bored, so that the phonogram-cylinder can easily be lifted out of these bearings. The slots *l* *l*¹ in the two bearings are cut at right angles to one another and are in such a position that the force of elasticity of an india-rubber belt *m*, connecting the pulley *n*, attached to the phonogram-cylinder, with the pulley *o* of the driving device, will keep the axis of the phonogram-cylinder always pressed firmly in the bearings, and thus produce a steady movement. By this simple means I have found that articulate speech, songs, and instrumental or other music may be reproduced from sound-writing very accurately, and with great loudness, clearness and distinctness.

It will be seen that this graphophone has a cylinder that may be rotated by any driving mechanism and a sounding-trumpet whose point end is movable along the cylinder, following the sound-writing. The point end automatically follows the spiral groove of the sound-writing, and the vibrations are transmitted to the trumpet, which generates and largely increases the volume of sound.

As the hard point *d* is held in a socket, it may be removed when worn and a new one inserted.

An adjustable cushion *p* is shown in Figures 3 and 6, as a ring, and is mounted on the rod and may be shifted along said rod. This cushion bears on the wall of the trumpet, and its varying position alters the tone or pitch of the sound.

A cylinder is shown carrying the sound-writing; but it is obvious a disc may be used instead or any shaped body to rotate.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A graphophone having in combination a rotating sound-writing; a vibratory

Hogan's Improvements in Graphophones.

- cone-shaped sounding-trumpet pivoted to allow its point end a free swinging movement, and also a slight vertical movement; a hard point engaging the surface of the said sound-writing in front of and in-line with the point end of the trumpet but not contacting therewith and supported by a rod, which
- 5 extends along the outer wall of the trumpet and attached to the side thereof.
2. A sounding-trumpet for graphophones comprising a sheet of fibre folded to form a cone and the edges which come together bordered by strips of metal folded over the edges and the said metal strips united, and a hard point at the point end of the trumpet.
- 10 3. A sounding-trumpet for graphophones having a cone shape and made of fibre; a strip of thin metal extending longitudinally of said cone and secured to the trumpet; a hard point in front of the trumpet's point end but not attached thereto; and a rod supporting the said hard point and extending along the outside of the trumpet and attached to said metal strip.
- 15 4. A graphophone having a base provided with two bearings each having a slot inclining in a different direction from the other; a rotary cylinder carrying the sound-writing and having journals resting in said slotted bearings; a pulley on one journal; a drive-pulley; and a belt from the drive-pulley to the cylinder-pulley, as and for the purpose set forth.

20 Dated this 11th day of November 1899.

W. P. THOMPSON & Co.,
Of 6, Lord Street, Liverpool, Agents for the Applicant.

Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.

[Wt. 39—25/11/1909.]

A.D. 1899. Nov. 13. No. 22,612.
HOGAN'S COMPLETE SPECIFICATION.

(1 SHEET)

(2nd Edition)

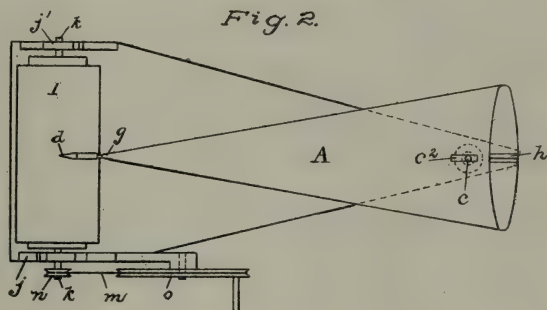
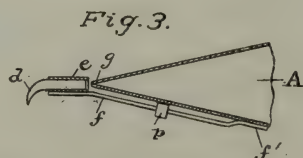
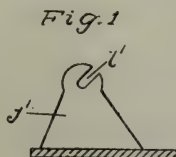


Fig. 6.

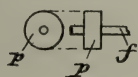


Fig. 4.

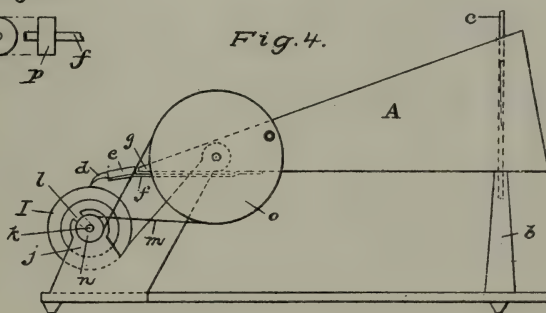
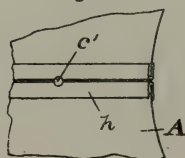


Fig. 5.



[This Drawing is a reproduction of the Original on a reduced scale.]

[Second Edition.]

N^o 7594

A.D. 1900

Date of Application, 24th Apr., 1900—Accepted, 23rd June, 1900

COMPLETE SPECIFICATION.

Improvements in Graphophones or Phonographs.

A communication by GEORGE L. HOGAN, of the City of Baltimore, State of Maryland, United States of America, Electrical Engineer.

I, WILLIAM PHILLIPS THOMPSON, F.C.S., M.I.M.E., Agent for Foreign Patent Solicitors, 6, Lord Street, Liverpool, and 6, Bank Street, Manchester, both in the County of Lancaster, 118, New Street, Birmingham, in the County of Warwick, & 322, High Holborn, in the County of Middlesex, Civil Engineer, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This present invention pertains to improvements in graphophones or phonographs, the construction and advantages of which will be hereinafter set forth, reference being had to the annexed drawings, wherein—

Fig. 1 is a side elevation of the machine as a whole;

Fig. 2, a top plan view;

Fig. 3, a perspective view of a portion of the trumpet and the reproducing point or stylus;

Fig. 4, a perspective view of the trumpet and its supporting arm;

Fig. 5, a transverse sectional view of a portion of the trumpet, showing the means employed for connecting its edges;

Fig. 6, a similar view illustrating a modified form thereof;

Fig. 7, a side elevation, partly in section, of a modified form of trumpet, and

Fig. 8, a side elevation of a record-supporting spool or holder, with the sound record shown in section thereon.

The main object of this invention is to produce a simple, cheap, and yet highly efficient phonograph.

With the construction hereinafter described, many advantages present themselves, more particularly in the method employed for imparting motion by hand to the sound record, whereby an even application of power is obtained; and again, in the manner in which the trumpet is secured together, and further, in the means employed for supporting the trumpet, all of which will be set forth in detail.

Other objects and advantages will appear in the following description.

Referring first to Figs. 1 and 2, A denotes the base or main frame of the instrument, supported upon two fixed legs B, B, and an adjusting screw C by means of which the base may be brought to its proper level position.

Rising from the base, preferably at one side thereof, is an upright arm or member D in the rear upper portion of which there is formed an upwardly and rearwardly extending slot E, while a similar slot is formed in a corresponding arm upon the opposite side of the base. These slots constitute the supports or bearings for the ends of the axle F of the record spool G. The axle may be formed in one piece and extend from end to end of the spool, or it may comprise simply two short pins secured in the ends of the spool.

[Price 8d.]

Thompson's Improvements in Graphophones or Phonographs.

As will be noted upon reference to Figures 2 and 8, the spool or support G is provided at one end with a pulley H.

Mounted and fixed upon a suitable axle journaled in the forward portion of the upright wall or member D, is a band pulley I, while connected to the outer end of said axle is a crank I¹ for imparting motion thereto. A second axle is secured in the upright member D, and upon this is loosely mounted a small pulley J, having formed integral therewith or connected thereto a fly-wheel K.

Suitable elastic bands L, such for instance as rubber, connect the pulleys I and J, and pulley J with the pulley H of the record spool or support.

Where power is applied to the crank by hand, it is next to impossible to turn the same with that evenness which is necessary to the best results in a phonograph,—especially so where a musical record is being used. By reason of the yielding of the elastic bands, which work in conjunction with the fly-wheel, the motion which is imparted to the record support or spool is quite even. In other words, should the operator give a sudden jerky motion to the crank, it will not be imparted to the record, but will be taken up and absorbed in a great measure by the yielding of the band or bands. By the use of elastic bands, the record or record support may be easily withdrawn from its bearings, and a new one introduced. The elastic band, working on the record support, serves to hold said support to its proper place relative to the bearings or slots E.

For the sake of lightness and appearance, the central portion of the base is cut away or left open in the process of manufacture; and extending forwardly from this open portion is a slot M, preferably closed at its forward end.

N denotes the trumpet support, which is preferably of the form illustrated in Figures 1 and 4; that is to say, comprises a long, tapering arm carrying at its forward end an upwardly extending point or finger O. The opposite end of the support extends down and is broadened out somewhat, presenting a flat bearing surface which rests upon the base at each side of the slot when the parts are assembled.

To maintain the parts in place, the support is provided with a downwardly extending T-shaped member P, the body of which passes through the slot, while the laterally extending arms engage the under face of the base,—see Fig. 1. To prevent any lateral or sidewise movement of the support, a downwardly extending stud or lug Q is also provided, which projects into the slot, as indicated in dotted lines in Figure 1. From this it will be seen that the support is firmly held in its proper relation to the base, that it may be adjusted back and forth in the slot, and may be readily detached and removed from the base when it is desired so to do.

R denotes the trumpet, the body of which is made of relatively thin, tough paper, papier-mâché, indurated fibre, isinglass, gelatin, or preferably, celluloid, formed of a single piece and having its edges joined together by a strip of sheet-metal in the manner illustrated in Fig. 5, or that shown in Fig. 6. In place of the sheet-metal binding strip a strip of celluloid, formed so as to embrace the adjacent edges of the sheet may be used, in which case the binding strip and the edges of the sheet will be held together by celluloid glue, or some similar material.

In Fig. 5 it will be seen that the edges of the trumpet overlap one another and are embraced between the folds of the reversely turned edges of a sheet-metal strip or a strip of celluloid, said strip extending from end to end of the trumpet, as is clearly indicated in Figs. 1 and 4.

In Fig. 6 two pockets are formed in the binding strip by bending it as shown, that is to say, by first bending the edges of the strip toward the centre of the body, and then outwardly again upon the inturned portion, the edges of the trumpet body being inserted into the spaces or pockets thus formed.

With both forms of connecting device, when the parts are assembled, a suitable cement is employed to ensure close contact and firm adhesion,—in the case of the metal strips, said strips and the edges of the trumpet are of course squeezed

Thompson's Improvements in Graphophones or Phonographs.

together or otherwise brought into close and intimate contact, so that there can be no independent vibration of the parts one relatively to the other.

Celluloid is perhaps the best material which can be employed in the construction of a trumpet, particularly for the class of machines similar to that herein shown and described. It is light, and when built up in the manner described, is highly resonant, is durable, cheap, and also possesses many other advantages which are apparent to any one familiar with this art.

While the trumpet has been shown in connection with a particular form of phonograph, still it is apparent that it may be used with any type of machine to great advantage.

Soldered or otherwise secured to the forward end of the binding strip S is an arm T, the main body of which stands at a slight distance from and parallel to said binding strip. It is provided throughout its length with interned or locking edges U adapted and designed to engage with similar outwardly turned edges of a U-shaped member V. In the lower side of said member V there is formed an opening W through which the finger O of the supporting arm extends, the upper pointed end of said arm bearing against the under face of the arm T, as indicated in Fig. 1. The opening W is of such size as not to bind upon the arm or finger O, but to permit a slight free movement of the parts.

At or near the rear end of the binding strip S, there is secured by solder or otherwise, a holding and clamping device for the point or stylus X of the graphophone. Said clamping device comprises two spring arms Y and Z, the arm Y being nearest to the strip, while the arm Z which is somewhat longer, stands in a plane below the arm Y and has secured to it a rounded support or seat *a*.

The reproducing point or stylus X, in the form shown, comprises a short section of glass tubing or rod, having one end closed, if a tube, and drawn down to a point to form the working point, while the body thereof surrounds the arm Y and rests upon the support *a*, as is most clearly shown in Fig. 3.

Interposed between the binding strip S and the upper face of the body of the stylus or reproducing point, is a cushion *b*, preferably formed of leather or a somewhat similar yielding substance.

From the foregoing it will be seen that the stylus may be moved back and forth upon its support, so that its point may be projected beyond the end of the trumpet, as indicated in Figs. 3 and 4, or may be directly below the trumpet as indicated in Figs. 1 and 2.

The record support (shown in Fig. 8) is cut away throughout the major portion of its length to render it light in weight, while at the same time it affords a sufficient bearing at each end for the record or cylinder employed.

In Fig. 7 a modified form of the trumpet is shown, which, instead of being a true cone or a frustum of a cone, consists of a main portion *c*, which may be a true cone or a frustum of a cone having connected to it two or more sections *d e* each of which is a frustum of a cone made upon a different angle from each other and from the main body so as to produce a flaring-shaped trumpet. The various sections of the trumpet will be made of the material before mentioned, and will be connected throughout their length by fastenings similar to those shown in Figs. 5 and 6. The adjacent or abutting ends of the various sections will have secured upon them metal strips or bands *f*, which will embrace the ends and which strips in turn will be soldered or brazed to each other entirely around the trumpet. The outer end of the trumpet will also preferably be provided with a sheet-metal strip or ring securely held thereon by some cementitious substance and pressure, as above described in connection with the binding strip S.

While my correspondent has shown and described this modified form of trumpet as being made up of a series of cone frusta, it is of course possible to make it up of a series of pyramid frusta, though, from many points of view, the conical form is preferable.

Thompson's Improvements in Graphophones or Phonographs.

From the foregoing description it will be seen that when the parts are assembled, the trumpet will swing upon the finger O and that the stylus or point X will follow the sound writings upon the cylinder or other sound record being used. By reason of the adjustability of the arm or trumpet support N the stylus or point can be brought to its proper position relative to the cylinder so that the best results may be obtained. It will be noted that the supporting member V is also adjustable with relation to the arm U, and that a certain degree of elasticity is present in said arm U. By these adjustments the proper degree of pressure necessary to be had upon the reproducing point is secured, and the parts may be adjusted with a nicety which is requisite to the best results. A variation in the character of the sound reproduced may also be obtained by adjusting the stylus back and forth with relation to the trumpet.

While my correspondent has shown an apparatus designed to be driven by hand, it is manifest that instead of the mechanism illustrated, a spring or other motor may be employed for imparting the necessary rotation to the spool G which supports the record.

Having now particularly described and ascertained the nature of the said invention and in what manner the same is to be performed, as communicated to me by my foreign correspondent, I declare that what I claim is:—

1. In a phonograph, the combination of a suitable base; arms extending upwardly therefrom; a rearwardly extending slot formed in each of said arms; a record support provided with axles extending from its ends and adapted to rest in said slots; and means for imparting motion to said support.
2. In a phonograph, the combination of a suitable base; arms extending up therefrom; a rearwardly extending slot formed in each of said arms; a record support journaled in said slots; a driving pulley; and elastic connections intermediate said pulley and the support for imparting motion to the latter, substantially as described.
3. In a phonograph, the combination of a suitable base; a record support journaled thereon; a power pulley; and elastic connections intermediate said pulley and the record support for imparting motion to the latter, substantially as and for the purpose described.
4. In a phonograph, the combination of a suitable base; a record support journaled thereon; a power pulley; a fly-wheel; and elastic connections intermediate the record support, the fly-wheel, and the power pulley, substantially as and for the purpose described.
5. In a phonograph, the combination of a suitable base; means for holding a sound record rotatably thereon; a source of power; a fly-wheel; and elastic driving bands connecting the record-holding means and the fly-wheel, and said fly-wheel and the source of power.
6. In a phonograph, the combination of a suitable base; arms or supports extending up therefrom, each provided with an upwardly and rearwardly inclined slot; a record support having its bearings resting in said slots; a power pulley I; a pulley J located intermediate said pulley I and the record support; a fly-wheel working with said pulley J; and elastic bands L connecting the power pulley I and the record support with pulley J.
7. In a phonograph, the combination of a suitable base; a record support carried thereby; a trumpet; and an adjustable support for the trumpet mounted upon the base.
8. In a phonograph, the combination of a suitable base; a record support carried thereby; a trumpet; and a yielding support for the trumpet, substantially as described.
9. In a phonograph, the combination of a suitable base; a record support carried thereby; a trumpet; and an adjustable and yielding support for the trumpet, substantially as described.
10. In a phonograph, the combination of a suitable base; a record support

Thompson's Improvements in Graphophones or Phonographs.

carried thereby; a trumpet; an adjustable support for the trumpet mounted on the base; and means for adjusting the level of the base.

11. In a phonograph, the combination of a suitable base; a record support carried thereby; a trumpet; an adjustable and yielding support for the trumpet; and means for adjusting the level of the base.

12. In a phonograph, the combination of a suitable base; a record support carried thereby; a trumpet pivotally supported at its outer end and having its inner end above the record support; and means for adjusting the level of the base; substantially as and for the purpose described.

13. In a phonograph, the combination of a suitable base; a record support carried thereby; a trumpet; and means carried by the base for adjusting the trumpet toward and from said support, substantially as described.

14. In a phonograph, the combination of a suitable base; a record support; a trumpet; an arm adjustably connected to the forward end of said base and extending out therefrom; and pivotal connections intermediate said arm and the trumpet, whereby the rear end of the trumpet may be adjusted with relation to the record, and is free to move both laterally and vertically, substantially as described.

15. In a phonograph, the combination of a suitable base; a record support; a trumpet; an arm adjustably connected to the forward end of said base and extending out therefrom; a finger extending up from said arm; and connections, substantially as described, between said finger and the trumpet.

16. In a phonograph, the combination of a suitable base; a record support carried thereby; a slot formed in the forward portion of the base; an arm N provided with means working in conjunction with the slot for adjustably attaching said arm to the base; a finger O extending up from the forward end of arm N; a trumpet; an arm U connected to the under side of the trumpet; and a member V connected to said arm and provided with an opening through which the finger O extends.

17. In combination with a phonographic trumpet, a point or stylus connected thereto, said stylus comprising a section of glass tubing or rod drawn to a point at one end.

18. In combination with a phonographic trumpet, a reproducing point or stylus, said stylus comprising a section of glass tubing or rod drawn to a point at one end; means for holding the stylus in close contact with the trumpet; and a cushion interposed between the stylus and the trumpet.

19. In combination with a phonographic trumpet, a reproducing point or stylus, comprising a section of glass tubing or rod drawn to a point at one end; a support for said stylus, consisting of two arms Y and Z attached to the trumpet; and a cushion intermediate the tube and trumpet, substantially as described.

20. In combination with a phonographic trumpet, a reproducing point or stylus, comprising a section of glass tubing or rod drawn to a point at one end; a support for said stylus, comprising two arms Y and Z; a bearing a attached to said arm Z; and a cushion interposed between said stylus and the trumpet.

21. In combination with a phonographic trumpet, a reproducing point or stylus, comprising a section of glass tubing or rod drawn to a point at one end; and means for adjustably connecting the stylus to the trumpet, substantially as described.

22. A trumpet for phonographs, composed of a single sheet of resonant material having its edges clamped and held together by a single strip of metal or the like, substantially as described.

23. A trumpet for phonographs, composed of a single sheet of resonant material bent to form, and having its edges treated with a cementitious substance and held together by a single strip of metal or the like bent around them, substantially as described.

24. A trumpet for phonographs, comprising a single sheet of resonant

Thompson's Improvements in Graphophones or Phonographs.

material bent to form; and a strip of metal shaped to form pockets adapted and designed to receive and hold the proximate edges of the sheet, substantially as described.

25. A trumpet for phonographs, comprising a main body portion composed of a single sheet of resonant material bent to form, and having its proximate edges secured together; and an additional flaring section secured to the outer end of the main body, said flaring section being likewise formed of a single sheet of resonant material having its proximate edges secured together, substantially as described.

26. A trumpet for phonographs, comprising a main body portion and a series of connected sections attached to the large end of the body portion, each succeeding section having its walls more flaring than those of the preceding one, substantially as described.

27. A trumpet for phonographs, comprising a main body portion and a series of connected sections attached to the large end thereof, each succeeding section having its walls more flaring than those of the preceding, and the main body and each of the sections being each formed from a single sheet of fibre having its proximate edges secured together by a strip of metal or the like, substantially as described.

28. A trumpet for phonographs, comprising a main body portion conical in form and composed of a single sheet of resonant material having its proximate edges secured together by a strip of metal or the like; and a series of connected sections attached to the large end of the main body, each succeeding section being in outline a frustum of a cone, having a larger base than the preceding and each formed of a single sheet of resonant material having its proximate edges connected by a metal strip or the like, substantially as described.

29. A supporting spool for phonographic sound records having its central portion cut away or reduced in diameter, and having a pulley formed at one end thereof, substantially as described.

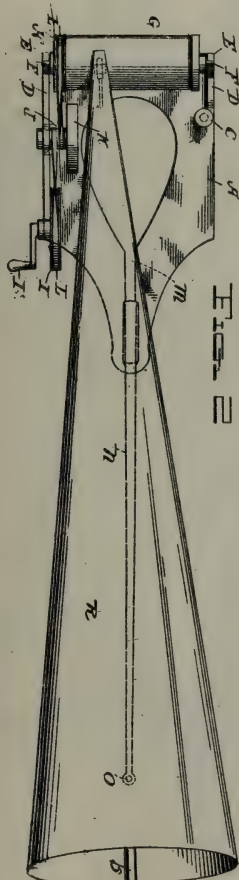
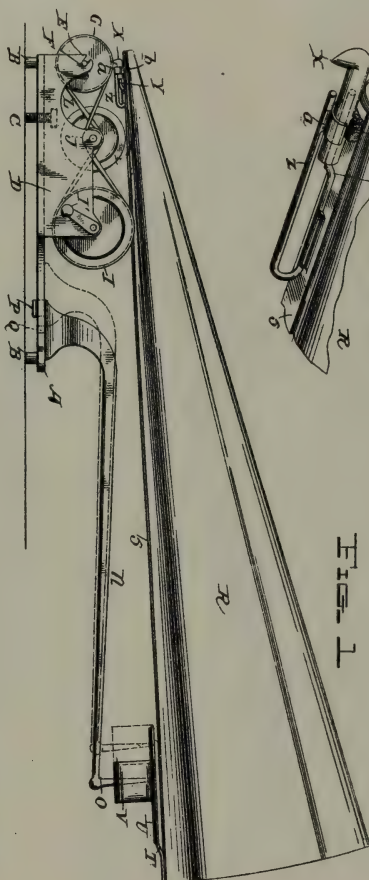
30. A trumpet for phonographs or the like, composed of celluloid or its described equivalent.

31. A trumpet for phonographs composed of a sheet of celluloid bent to form and having its proximate edges secured together in a manner substantially as herein set forth.

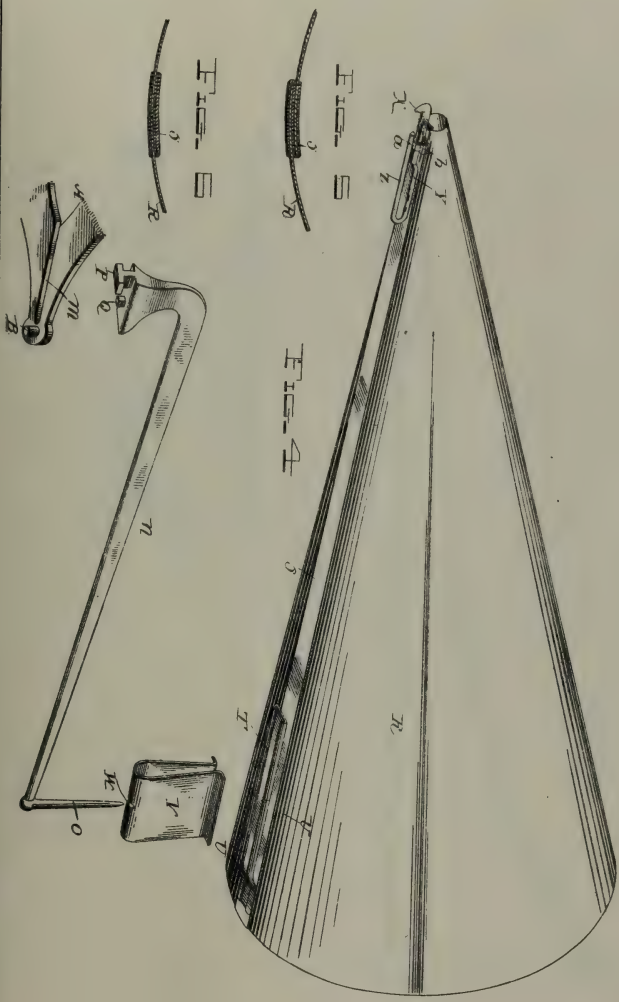
Dated this 23rd day of April 1900.

WM. P. THOMPSON & Co.,
Agents.

35

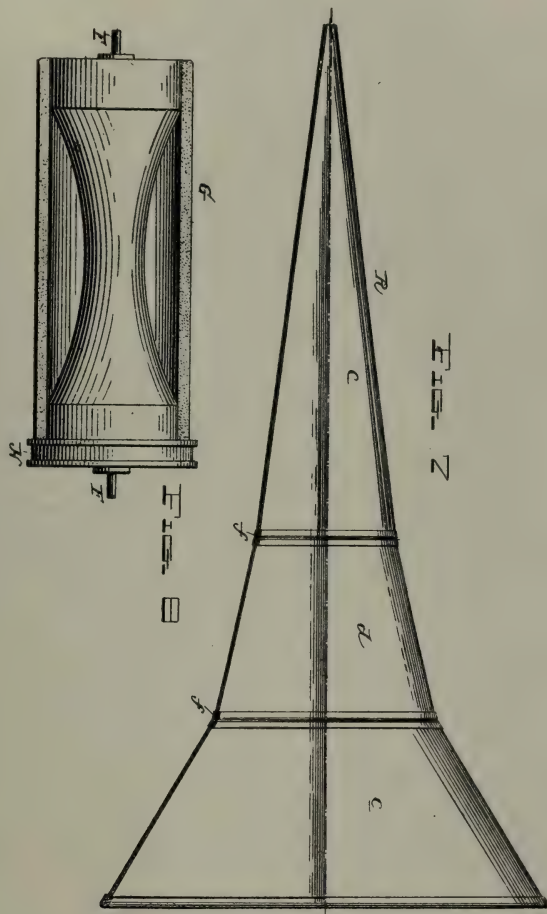


[This Drawing is a reproduction of the Original on a reduced scale.]



A.D. 1900. APRIL 24. N^o 7594.

THOMPSON'S COMPLETE SPECIFICATION.

(3 SHEETS
SHEET 3(2nd Edition)

[This Drawing is a reproduction of the Original on a reduced scale]

[Second Edition.]

N^o 9727



A.D. 1901

Date of Application, 10th May, 1901

Complete Specification Lett, 5th Oct., 1901—Accepted, 7th Dec., 1901

PROVISIONAL SPECIFICATION.

"Improvements in or relating to Graphophones, Phonographs and the like"

I, WALTER C. RUNGE, Engineer of 49 Queen Victoria Street, in the County of London, do hereby declare the nature of this invention to be as follows:—

This invention relates to graphophones, phonographs and other like instruments for reproducing sounds from records, its object being the construction of an instrument which, while thoroughly efficient in operation, is simple and cheap to manufacture.

The improvements are primarily applicable to instruments which are not provided with a diaphragm at the small end of the trumpet, but have a stylus of hard material attached to some part of the trumpet, the point of this stylus following the channels of the record in the well-known way. It is, however, to be understood that the improvements are not necessarily restricted to this particular type of instrument.

One construction of graphophone or phonograph according to this invention comprises a motor, which may, for example, be in the form of a train of wheels driven from a spring, this motor driving a mandrel adapted to receive a cylindrical record and also causing the rotation of a fine pitched screw, the axis of which is approximately parallel with that of the mandrel.

Held in suitable standards upon the base, which is preferably made heavy say by forming it of cast metal, is a guide-rod having free to slide and turn upon it a carrier. This carrier normally lies over the fine-threaded screw and is formed with a knife edge which engages with the thread. At the end of the carrier adjacent to the record mandrel is a fork, which may conveniently consist of two wire arms covered with some soft or yielding material, such for example as rubber tubing.

Upon the base of the instrument is a socket having a vertical hole which accommodates the end of a rod, serving as the support upon which the larger end of the sound trumpet is pivotted. This socket is provided with one or more slots with which engage pins upon the supporting rod, the object of this being to ensure that the pivot about which the trumpet turns shall be truly centred with regard to the record cylinder.

The sound trumpet may be made of any suitable material, celluloid being found very convenient for the purpose. When sheet material such as celluloid is employed the trumpet is joined down one side by metal strips or grips which may be joined say by soldering. To this strip is attached inside the larger end of the trumpet a small clip forming a slide, into which the edges of a U-shaped piece of metal are inserted. A hole is made through this clip and through the hole passes the pointed end of the trumpet support, its extreme point bearing against the inside of the U-shaped piece of metal and forming a pivot about which the trumpet may turn. The U-shaped piece is preferably formed so that the portion which rests on the pivot is approximately horizontal, thus obviating the danger of any binding action taking place.

In another construction of trumpet the pointed end of the support enters a hole made to receive it in a stem or rod which is pivotally attached to the trumpet.

Near the smaller end of the trumpet a socket is provided to accommodate the

[Price 3d.]

Improvements in or relating to Graphophones, Phonographs and the like.

stylus which may be of any hard material, say for instance glass rod or tubing. This socket may conveniently be attached to the metal strip which extends along the cone, and may be formed of spring metal and provided with a screw or other clamping device so that the stylus may be securely gripped. Preferably the ends of the socket are turned inwards so that the stylus is gripped by each end of the socket, the clamping screw being in the middle. 5

In operation the larger end of the trumpet is pivotted as above described on its supporting rod, the smaller end passes between the arms of the fork on the pivotted carrier, and the point of the stylus rests upon the cylinder.

In order that the point of the stylus may be withdrawn from contact with the record cylinder or any adjacent part of the mechanism when the instrument is not in use, a small safety catch or bracket is provided which may be secured to part of the framework. By slightly lifting the pivotted carrier, the latter may be caused to engage with the catch and the stylus is then placed out of contact with any part of the mechanism. 15

A cheap and effective mandrel for cylindrical records may be formed of a piece of light tubing, the diameter of which corresponds to that of the smaller end of the coned interior of the record, the larger end of the record fitting over a ring of larger diameter than the tube. This ring may conveniently form part of a pulley by which the mandrel is driven. 20

When a clock-work motor is employed, instead of having the usual winding key which is screwed on to its stem, the stem may be provided with projecting pins and the crank or key formed with a socket which slips over the stem and slots which accommodate the cross pins. These slots may be oblique and formed in such a direction that a slight turn of the handle brings it into connection with the pins so that the stem may be turned and a corresponding turn in the other direction disengages the handle from the stem. 25

In order that the motor may run with a minimum amount of noise it is preferred to make one or more of the gear wheels of vulcanized fibre or some other suitable non-metallic material. 30

Although in the above description a cylindrical record is mentioned it will be understood that the various improvements may be adapted to instruments having records of other form such for example as discs. Again the instruments may be adapted for hand or foot driving, or may be operated by means of an electric motor. 35

When the trumpets are made with detachable flared mouth-pieces, it is preferred to secure the mouth-piece to the main portion of the trumpet by means of screw clamps or the like. Two clamps may be provided at opposite sides of the trumpet which when tightened up grip the rim of the flared portion. 40

Dated this 10th day, of May, 1901.

WALTER C. RUNGE,

Boult, Wade & Kilburn,

Agents for the Applicant.

COMPLETE SPECIFICATION.

"Improvements in or relating to Graphophones, Phonographs and the like". 45

I, WALTER C. RUNGE, Engineer of 49 Queen Victoria Street, in the County of London, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:— 50

This invention relates to graphophones, phonographs and other like instruments for reproducing sounds from records, its object being the construction of

Improvements in or relating to Graphophones, Phonographs and the like.

an instrument which while thoroughly efficient in operation is simple and cheap to manufacture.

The improvements are primarily applicable to instruments which are not provided with a diaphragm at the small end of the trumpet, but have a stylus of hardened material attached to some part of the trumpet, the point of this stylus following the channels or grooves of the record in the wellknown way. It is, however, to be understood that the improvements are not necessarily restricted to this particular type of instrument.

In the accompanying drawings

10 Figure 1 is a perspective view of one construction of graphophone embodying the improvements according to this invention;

Figures 2 and 3 are detailed views showing portions of the instrument separately; and

15 Figures 4 and 5 are perspective views showing alternative constructions of another portion of the instrument.

Like letters indicate like parts throughout the drawings.

With reference first to Figure 1 A is a base plate preferably of cast metal of considerable thickness, so that it may be heavy and rigid. Upon this base is fixed a motor comprising in the example illustrated a train of wheels B mounted
20 between two plates B¹, one member B² of the train being preferably of hard fibre or other non-metallic material. From this motor a record carrying mandrel C is driven by means of a belt D and a pulley C¹. The train of wheels forming the motor is driven from a spring coiled in a barrel B³ and wound up when necessary and the rate of rotation of the record mandrel C may be regulated by
25 a lever E controlled by a screwed rod or other mechanism not shown in the drawings. One end of this lever E is furnished with a brake block E¹ say of leather, which presses against a disc F¹ connected to governors F, the action of the governors being to draw the disc F¹ away from the plate B¹ along a rod F² supported between that plate and a standard F³ secured to the base A. A lever G is provided by means of which the motor may be started and stopped.

Mounted free to turn between the outer plate B¹ and a standard H is a fine threaded screw J provided with a pinion J¹ which is driven from one of the wheels B. Parallel to this screw J and also held between the plate B¹ and the standard H is a rod K which forms a guide upon which a sleeve K¹ can travel
35 and turn. This sleeve K¹ forms part of a pivoted carrier comprising also a lever K², a head K³ and a fork K⁴, the arms of the latter being covered with rubber tubing or other soft or yielding material. Normally the carrier K² K⁴ lies upon the fine threaded screw J as shown in Figure 1, and it is provided with a knife edge K⁵ or otherwise adapted to engage with the thread of the screw J so that when the latter rotates the carrier may be caused to travel along the
40 bar K.

Upon the base plate A is a socket L having a central vertical hole which accommodates the end of a rod M, the pointed extremity of which serves as a pivot to support the larger end of a sound trumpet N. Slots L¹ are provided
45 in the socket L and pins M¹ upon the rod M engage with these slots when the rod M is in the socket, thus securing a definite position for the pivot of the sound trumpet.

The sound trumpet N may be made of any suitable material preferably non-metallic such for instance as tough paper, thin fibre or celluloid. When sheet
50 material such as celluloid is employed the trumpet is conveniently made by providing the edges of the sheet with metal strips or grips as shown at N¹ in Figure 2, these strips being joined say by soldering. In some constructions only one strip is used its edges being turned over so as to grip the edges of the sheet material of which the trumpet is formed. To the strips N¹ inside the larger end of the trumpet is attached a small clip N² forming a slide into which
55 the edges of a U-shaped piece of metal N³ are inserted. The pointed end of the rod M passes through a hole N⁴ and rests against the inside of the curved portion

Improvements in or relating to Graphophones, Phonographs and the like.

of the U-shaped piece N³. This U-shaped member is preferably formed so that the portion which rests upon the point of the rod M is approximately horizontal, thus obviating the danger of any binding action taking place.

Near the smaller end of the trumpet N a socket O is provided to accommodate the stylus P which may be of any hard material, say for instance glass rod or tubing. The socket O is preferably formed of spring metal and provided with a screw O¹ so that the stylus may be securely gripped. In the construction shown in detail in Figure 3 the ends of the socket are turned in as at O² so that the stylus is gripped by each end of the socket, the clamping screw O¹ being in the middle.

In operation the larger end of the trumpet is pivoted as above described on its supporting rod M, the smaller end passes between the arms of the fork K⁴ of the pivotted carrier and the point of the stylus P rests upon a record cylinder R which is mounted friction tight upon the mandrel C.

It is to be understood that the apparatus is so constructed that the point of the stylus P rests with a slight amount of pressure upon the record R. The carrier K³ K⁴ is not intended to take the weight of the trumpet, its function being primarily to act as a guide for the smaller end of the trumpet and prevent any danger of the point of the stylus quitting the grooves or channels in the record.

In order that the point of the stylus P may be withdrawn from contact with the record R or any adjacent part of the mechanism when the instrument is not in use, a small safety catch or bracket S is provided attached to one of the plates B¹. By depressing the back end of the carrier lever K³, the knife edge K⁵ is disengaged from the screw J and the lower end of the trumpet with the stylus P is lifted in the fork K⁴ and the head K³ is then allowed to rest in the catch S, in which position the stylus is out of contact with adjacent portions of the instrument.

Figures 4 and 5 show portions of sound trumpets made according to an alternative construction of this invention. In each of these forms a pivotted socket N⁵ is provided which accommodates the pointed end of the rod M. In Figure 4 this socket is shown provided with a cross arm N⁶ which is journaled in the downturned ends of a plate N⁷ attached to the trumpet. In the form shown in Figure 5 the socket N⁵ is slotted as at N⁸ and in this slot is a lug N⁹ secured to the trumpet, the lug and the slotted socket being pivotally connected by a pin N¹⁰.

When a clockwork motor is employed instead of having the usual winding key which is screwed on to its stem, the stem may be provided with projecting pins and the crank or key formed with a socket which slips over the stem and slots which accommodate the cross pins. These slots may be oblique and formed in such a direction that a slight turn of the handle brings it into connection with the pins so that the stem may be turned and a corresponding turn in the other direction disengages the handle from the stem.

Although in the above description a cylindrical record is mentioned it will be understood that the various improvements may be adapted to instruments having records of other form such for example as discs. Again the instruments may be adapted for hand or foot driving, or may be operated by means of an electric motor.

When the trumpets are made with detachable flared mouth-pieces, it is preferred to secure the mouth-piece to the main portion of the trumpet by means of screw clamps or the like. Two clamps may be provided at opposite sides of the trumpet which when tightened up grip the rim of the flared portion.

Having now particularly described and ascertained the nature of this invention and in what manner the same is to be performed, I declare that what I claim is:-

1. In a graphophone or the like the combination with a sound trumpet of a pivotted forked carrier substantially as described.

Improvements in or relating to Graphophones, Phonographs and the like.

2. In a graphophone or the like the combination with a pivotted carrier for the sound trumpet, of a catch or rest to hold the carrier and sound trumpet so that the point of the stylus is out of contact with the mechanism when the instrument is out of operation substantially as described.
- 5 3. In a graphophone or the like a pivotal support for the sound trumpet comprising a bent rod such as M M¹ and a slotted socket L L¹ with or without a U-shaped member such as N³ having a horizontal portion which rests upon the pointed extremity of the rod.
- 10 4. In a graphophone or the like the combination with the sound trumpet of a pivotted socket such as N³ substantially as described and illustrated in Figure 4 or in Figure 5 of the accompanying drawings.
5. The complete graphophone substantially as described and illustrated in Figure 1 of the accompanying drawings.

Dated this 4th day of October, 1901.

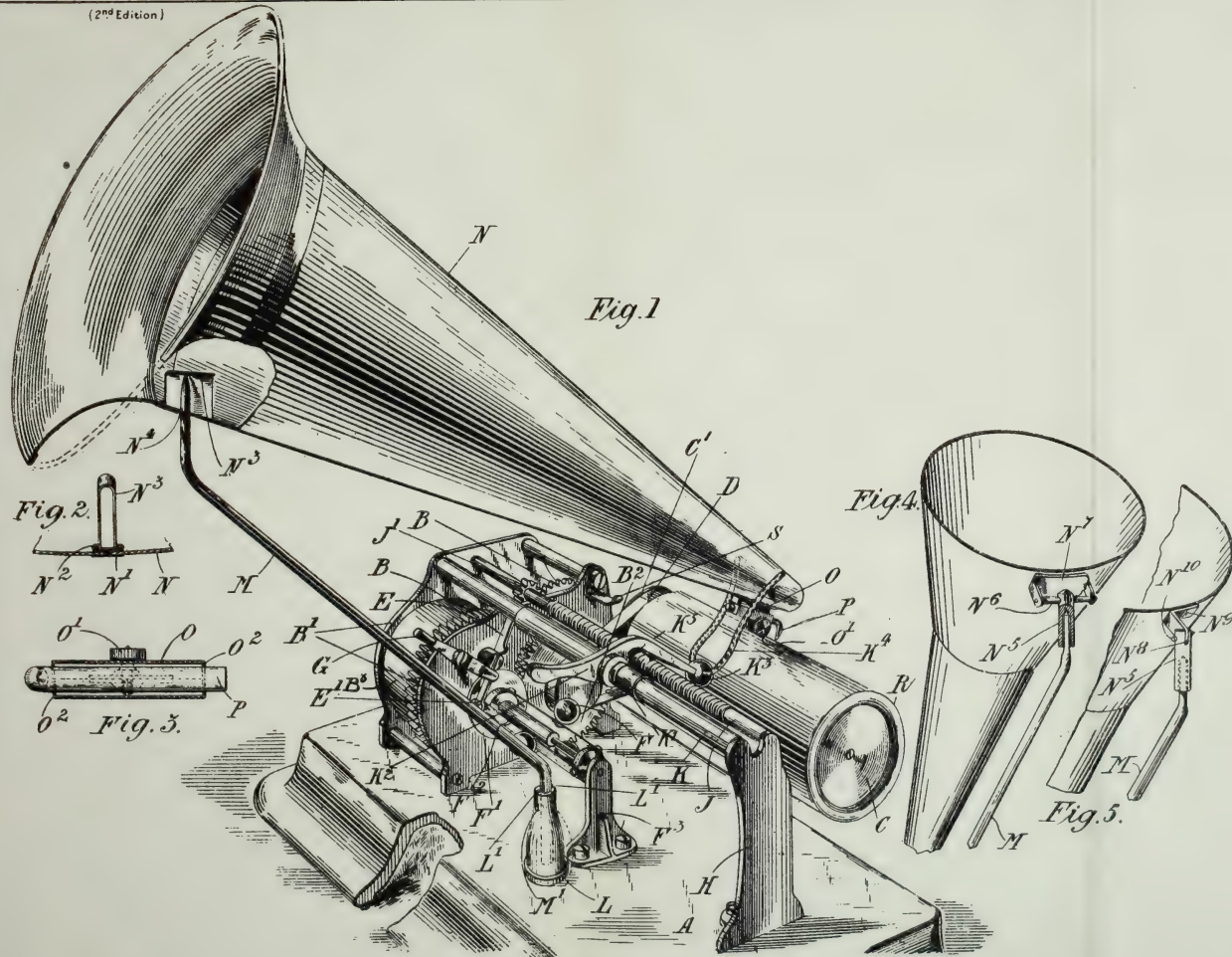
15

WALTER C. RUNGE,
Boulton, Wade & Kilburn,
Agents for the Applicant.

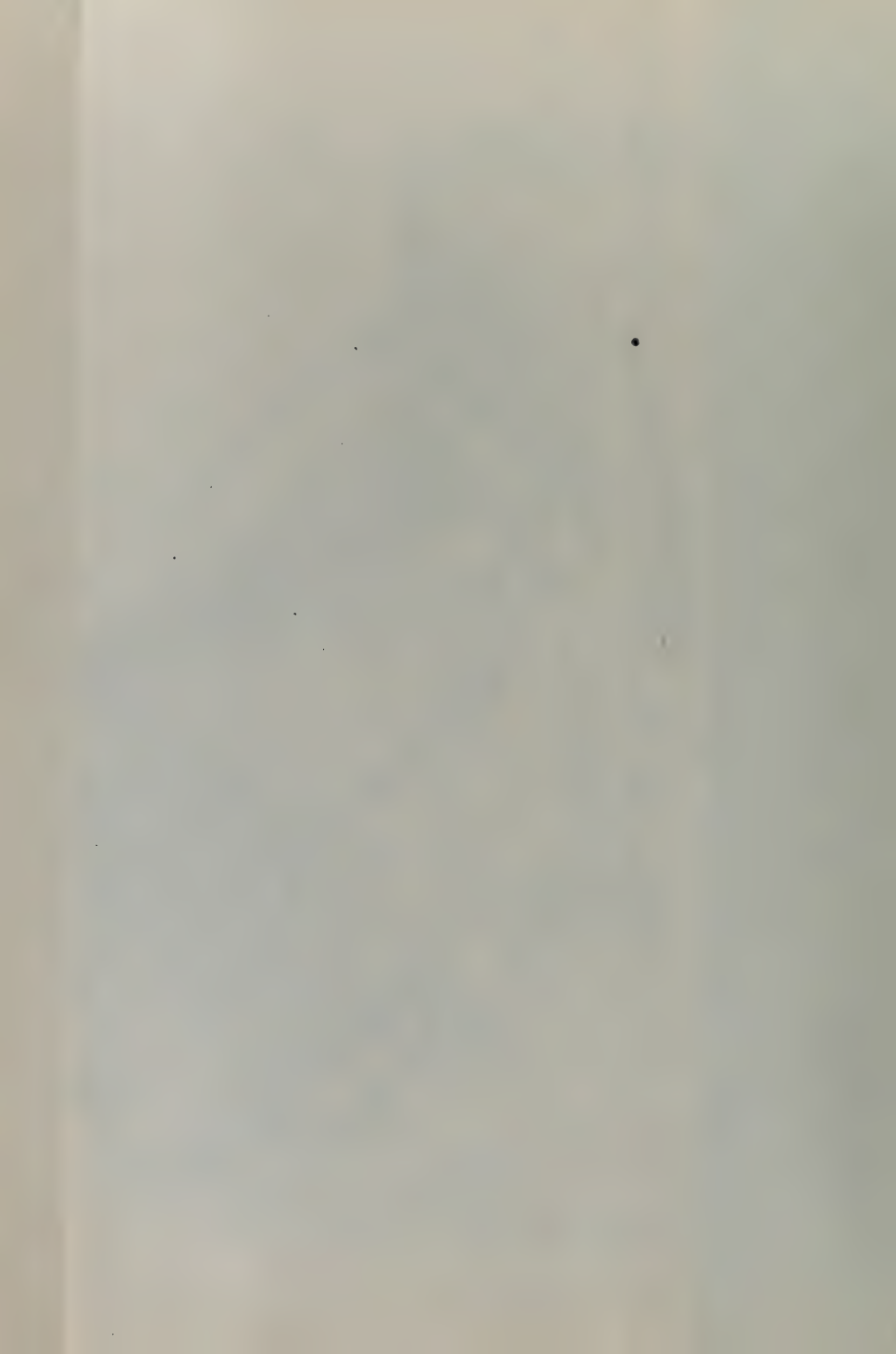
A.D. 1901. MAY 10. N^o 9737.
RUNGE'S COMPLETE SPECIFICATION.

(1 SHEET)

(2nd Edition)



This Drawing is a reproduction of the Original on a reduced scale.



N^o 22,273

A.D. 1901

Date of Application, 5th Nov., 1901

Complete Specification Left, 25th July, 1902—Accepted, 5th Nov., 1902

PROVISIONAL SPECIFICATION.

**"Improvements in or relating to the Sound Trumpets of
Graphophones, Phonographs and the like".**

I, WALTER C. RUNGE, Engineer, of 49 Queen Victoria Street, in the County of London, do hereby declare the nature of this invention to be as follows:—

This invention relates to the sound trumpets of graphophones, phonographs and the like, its object being the construction of a sound trumpet which shall have improved sound producing qualities and at the same time be simple to manufacture.

Sound trumpets according to this invention are made of sheet material say for example celluloid or the like, the edges being joined in any convenient way, but preferably by means of a metal clip running along the entire length of the sound trumpet and provided at one end with a clip or other accommodation for a stylus.

Instead of being circular in cross section throughout its length the improved sound trumpet is approximately elliptical and is provided with means for stiffening it at its periphery at points near the ends of the longer axis of the ellipse. Preferably the metal clip before mentioned serves to strengthen one side of the sound trumpet and opposite to it a fold or crease is made in the material forming the sound trumpet, this crease serving to stiffen the other side of the trumpet and cause it to retain its elliptical shape. If desired, however, a second strip or clip or a series of clips may be attached to the sound trumpet instead of or in addition to the fold or crease.

In order that sound trumpets according to this invention may be used with circular flared metal ends of the usual type it is preferred to make the crease or other strengthening device stop short just before it reaches the larger end of the trumpet which can then be easily placed within the circular end. When this is done the complete sound trumpet is of course circular in cross section at the point adjacent to the end piece, but throughout the other portion of its length it is, as before mentioned, of elliptical or approximately elliptical shape.

Dated this 5th day of November, 1901.

WALTER C. RUNGE.
Boulton Wade & Kilburn
Agents for the Applicant

COMPLETE SPECIFICATION.

**"Improvements in or relating to the Sound Trumpets of
Graphophones, Phonographs and the like"**

I, WALTER C. RUNGE, Engineer, of 49 Queen Victoria Street, in the County of London, do hereby declare the nature of this invention to be as follows:—
[Price 8d.]

Improvements in or relating to the Sound Trumpets of Graphophones, &c.

of London, do hereby declare the nature of this invention and in what manner the same is to be performed to be particularly described and ascertained in and by the following statement—

This invention relates to the sound trumpets of graphophones, phonographs and the like, its object being the construction of a sound trumpet which shall have improved sound producing qualities and at the same time be simple to manufacture.

Sound trumpets according to this invention are made of sheet material, say for example celluloid or the like, the edges being joined in any convenient way, but preferably by means of a metal clip running along the entire length of the sound trumpet and provided at one end with a clip or other accommodation for a stylus.

Instead of being circular in cross section through-out its length the improved sound trumpet is approximately elliptical and is provided with means for stiffening it at its periphery at points near the ends of the longer axis of the ellipse. Preferably the metal clip before mentioned serves to stiffen one side of the sound trumpet and opposite to it a fold or crease is made in the material forming the sound trumpet, this crease serving to stiffen the other side of the trumpet and cause it to retain its elliptical shape. If desired, however, a second strip or clip or a series of them may be attached to the sound trumpet instead of or in addition to the fold or crease.

In order that sound trumpets according to this invention may be used with circular flared metal ends of the usual type it is preferred to make the crease or other strengthening or stiffening device stop short just before it reaches the larger end of the trumpet which can then be easily placed within the circular end. When this is done the complete sound trumpet is of course circular in cross section at the point adjacent to the end piece, but throughout the other portion of its length it is, as before mentioned, of elliptical or approximately elliptical shape.

In the accompanying drawings which illustrate one construction of sound trumpet according to this invention—

Figure 1 is a perspective view,

Figure 2 is a transverse section on the line 2—2 of Figure 1 and

Figure 3 is a similar section on the line 3—3 of Figure 1

Like letters indicate like parts throughout the drawings.

The sound trumpet A is made of flexible sheet material such as celluloid, its edges being joined by a metal clip B which forms a longitudinal stiffener along one side of it and is attached at the smaller end of the trumpet to a band B¹ encircling the trumpet and carrying a stylus B² in a socket B³. Another stiffener is provided preferably at or near the opposite side of the trumpet and this second stiffener in the example illustrated takes the form of a crease or bend C, which as well as stiffening the trumpet imparts to it a shape in cross section somewhat similar to that shown in Figure 2.

In order that the improved sound trumpet may be used with a flared mouth piece of the usual circular shape, the crease or fold is not carried quite to the larger end of the sound trumpet but stops short of that point as shown in Figure 1. The larger end of the trumpet is thus adapted to fit the mouth piece as its shape in cross section, as shown in Figure 3, is approximately circular.

The second stiffener instead of being in the form of a fold or crease may be constituted by a metal clip or strip attached to the outside or inside of the trumpet.

Having now particularly described and ascertained the nature of this invention and in what manner the same is to be performed, I declare that what I claim is—

1. In a graphophone or the like a sound trumpet having two or more longitudinal stiffeners substantially as described.

2. In a graphophone or the like a sound trumpet of flexible material fastened

Improvements in or relating to the Sound Trumpets of Graphophones, &c.

by a longitudinal clip B and provided with a stiffening fold or crease C substantially as described.

3. The sound trumpet for a graphophone or the like substantially as described and illustrated in the accompanying drawings.

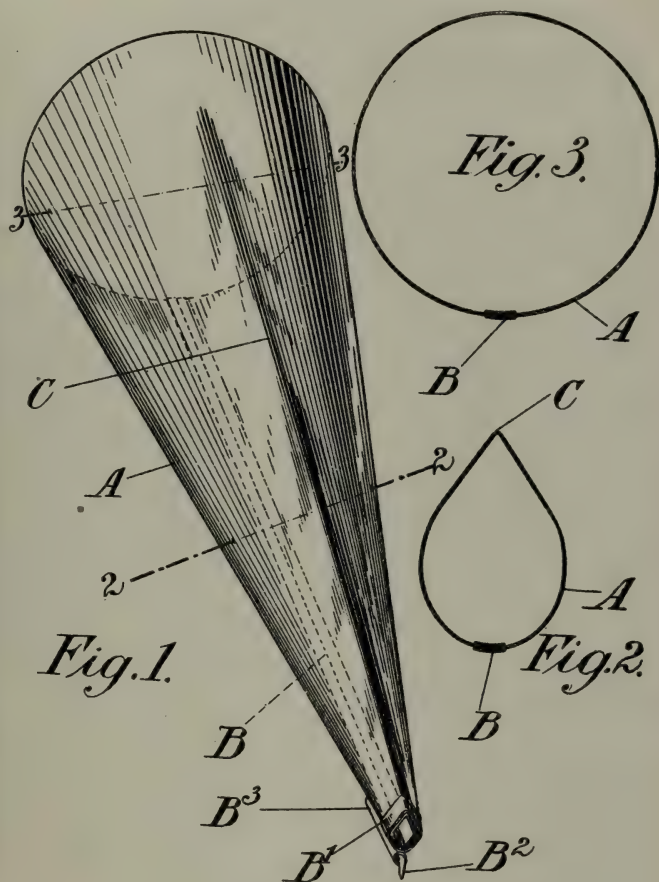
5 Dated this 24th day of July 1902.

WALTER C. RUNGE.
Boult Wade & Kilburn
Agents for the Applicant.

Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.

[Wt. 25—25/4/1963]

[This Drawing is a reproduction of the Original on a reduced scale.]





Date of Application, 13th Aug., 1902—Accepted, 25th Sept., 1902

COMPLETE SPECIFICATION.

Improvements in Phonographs and other Talking Machines.

I, HENRY FAIRBROTHER of 49 Kestrel Avenue, Herne Hill London S.E. Metal Trades' Valuer, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

5 My invention relates to that class of talking machine in which the reproduction of sound is produced by attaching a stylus to a trumpet, said trumpet being vibrated direct by the stylus from the record which carries the sound writing. The principal features of the invention are the method of attaching the said stylus to the trumpet, the material of which the trumpet is formed the formation of a longitudinal rib on the trumpet practically normal to the side thereof, the method of supporting the trumpet and of forming the joints therein and also the addition to the said trumpet of an internal tongue to increase the vibration.

10 My trumpet may be of any suitable form but is preferably cone or funnel shaped and is provided with a flanged or bell shaped mouth. I form the trumpet chiefly or entirely of sonorous material such as gelatine, indurated fibre, celluloid, paper or the like and compose it of one or more sheets of the same. By preference I make it of two or three sheets and of different materials, said sheets being in the form of layers or folds which are stuck together by any suitable adhesive substance. For instance, I may use a sheet of gelatine or cellulose material, backed up with a sheet of fibrous material such as paper, or of a sheet of cellulose material and a sheet of gelatine material stuck together. The object in using more than one sheet is for cheapness of manufacture as well as to improve the tone, as a certain thickness is required to obtain good results. I therefore use a thin sheet of the more expensive material and get the required thickness of the trumpet by 25 backing it up with cheaper material.

I employ several methods of forming the rib on the trumpet as well as several methods of attaching the stylus to the trumpet and also several methods of forming the trumpet from the sheet or sheets of material.

I will now describe my invention with reference to the accompanying drawings 30 in which:—

Fig. 1 shows an elevation of a cone-shaped trumpet partly in section, provided with a bell mouth which trumpet is constructed mainly of gelatine, indurated fibre, celluloid, paper or any other suitable sonorous material. By preference I form it from one sheet of material with a lap joint or turnover seam, longitudinally and glued or cemented together.

This trumpet is fitted at its smaller end with a plug of suitable material such as wood, the end of which, projects outside and in which a hole is cut to receive a stylus which is preferably made of glass. The wood plug is preferably formed with a saw cut or split in order to give it a springy grip of the stylus. The wood 40 plug is extended inside the trumpet in the shape of a thin flat tongue wider at its outer end to conform to the shape of the trumpet, to the walls of which it may be fastened if desired. This tongue greatly improves the reproductions but is not essential. If desired a small piece of cloth, leather or rubber may be held between the tongue and the wall of the trumpet where it is fastened or in contact 45 to still further improve the reproduction. The tongue is shown split as this further increases its usefulness and allows it to vibrate more freely with the walls

[Price 8d.]

Fairbrother's Improvements in Phonographs and other Talking Machines.

of the trumpet. Instead of having a hole for the stylus, the plug may be provided with a point or pin over which a hollow stylus is fitted.

This drawing also shows one method which I adopt for supporting the trumpet from close under the bell shaped mouth.

Fig. 2. is a plan view of Fig. 1, the bell mouth and wide end of the trumpet not being shown. 5

Fig. 3 is a side elevation of another form of trumpet and shows a different method of attaching the stylus to the same. In this case a block of suitable material, such as wood, is inserted in the end of the trumpet and is centrally bored to receive the stylus which may be permanently or removably fixed therein. The drawing shows the stylus resting on a record of the usual cylindrical shape. 10

Fig. 4 shows a side elevation of a trumpet provided with a rib on its under side to which is attached the support of the trumpet and also a clip to hold the stylus.

Fig. 5 is an enlarged sectional view on the line *x* of the end of the trumpet and of the clip and stylus shown in Fig. 4. 15

Fig. 6 is a sectional view on the line *y* of the trumpet shown in Fig. 4 and

Fig. 7 is a sectional view on the line *z* of the trumpet shown in Fig. 4.

Fig. 8 shows a perspective view of a grooved block which I use by preference for the formation of the folded or pressed rib such as that shown in Fig. 6.

Fig. 9 is a sectional view of a part of the body of the trumpet and shows how I arrange the various sheets, in this case three in number, forming the same so that their joints overlap and do not come directly underneath or next to each other. 20

Fig. 10 is a view similar to Fig. 9 showing two sheets only.

Fig. 11 is a side elevation of a complete phonograph or talking machine showing the relative position of the parts, the means I adopt of supporting the trumpet from its smaller end and the method of attaching the stylus to the rib at about half way up the same. 25

Fig. 12 is a sectional view of the rib of a trumpet, such for instance as that shown in Fig. 11 and shows a U shaped cap which is clamped over the rib to strengthen it. 30

Fig. 13 is a plan view of the talking machine shown in Fig. 11.

Fig. 14 is a side elevation of a trumpet formed from one piece or strip of sonorous material which has been wound round a cone-shaped form to produce the desired shape, the edges of the said strip overlap each other so as to break joints. A double thimble or cap like clip is fitted to the end of the trumpet and also carries the stylus. The larger end of the trumpet rests on a double or universal joint to give free lateral and vertical movement and is supported by a swing rod. 35

Fig. 15 is a front view of the larger end of the trumpet shown in Fig. 14 and more clearly shows the joint by which the trumpet has free lateral or vertical movement. 40

Fig. 16 is a side elevation of a trumpet made from two strips of material which are wound round each other the joints overlapping so as to break the same. This trumpet is provided with a rib on its under side and is fitted with a cap at its smaller end to which the stylus is attached. 45

Fig. 17 is a section of the trumpet shown in Fig. 16 and shows a form of rib which is attached after the trumpet is made.

Fig. 18 represents a method of forming the trumpet with a rib which may be rivetted or cemented.

Fig. 19 is an end view of the same. 50

Referring to Figs. 1 and 2 *a* is the trumpet fitted with bell mouth *a*¹ and at its smaller end with plug *b*, to plug *b* is fitted or fixed the tongue *b*¹ which is split as shown and as rubber or other suitable material *c* at its ends. The other or outer end of the plug is formed in the shape of a ball and holds the stylus *s*, said ball being split or cut at *h* to improve the grip. 55

To the wider end of the trumpet is fitted a band *d* provided with lugs carrying joint *e* to which is attached an inverted bearing *g* for the bracket or swing rod *f*

Fairbrother's Improvements in Phonographs and other Talking Machines.

thus making a universal joint and giving free lateral and vertical movement to the trumpet.

Referring to Fig. 3, *a* is a trumpet of which the lower or narrower end only is shown, this end is fitted with plug *b* which is bored with a central hole *i* to which the stylus *s* is fitted. The stylus *s* is shown resting on the record *w*.

Referring to Figs. 4, 5, 6, and 7 *a* is the trumpet fitted with bell mouth *a'* and rib *k* the upper part of which, *k'* has been folded or turned back again. the trumpet *a* to allow the bell shaped mouth *a'* to pass over it. To the lower end of rib *k* is fitted clip *l* made of any suitable material which carries the stylus *s*. The stylus is preferably removable being pushed into a slot *h* in the clip *l*. The stylus rests on the record or sound writing by gravity or spring tension.

Referring to Fig. 8. The block *p* is grooved as shown at *p'*, this is used to hold the folded or turned edges forming the rib *k* when made until the adhesive substance used in them has become hard or set.

In Figs. 9 and 10, the separate layers of material *a*, *a'*, and *a''* may be formed of different material, for instance *a* may be gelatine *a'* may be paper and *a''* may be of gelatine or any other suitable material. The ends or edges *j* of these separate materials do not lie directly over one another or in the same line.

Referring to Figs. 11 and 13, the trumpet *a* is formed with a joint or rib *k* shown in cross-section in Fig. 12, which joint is covered with a U shaped cap *q* which fits closely over the rib and holds the joint securely. This trumpet is hung from the small end and the stylus *s* is attached to the rib at a point *l* some distance from the smaller end of the trumpet. The rod *o* is fastened to the trumpet at *o'* which is hinged at *o''* to allow a free vertical movement about *o''* as a centre, the vertical rod *o'* is also pivotted at *o''* and rests loosely in the standard *o''* so as to allow a free lateral movement about *o''* as a centre. This standard is fixed to the base of the machine. The stylus *s* rests in the record by gravity and traverses the spiral sound writing of the record as it rotates. The record *w* may be turned by a suitable handle such as *w'* or it may be turned by clockwork or other suitable means.

Referring to Figs. 14 and 15 *a* is the trumpet formed spirally from a strip of material. At the lower end of the trumpet is fitted the double cap or thimble *r* one end of which embraces the trumpet and the other holds the stylus *s*.

To the wider end of the trumpet is attached a plate *t* formed with a lug *m* to which is jointed an inverted bearing *g* in which the spring rod *o* is free to work.

Referring to Fig. 16 the trumpet is formed from two strips *a'* and *a''* of material wound one over the other so as to break joints, the rib *k* may be attached afterwards as shown at *k* in Fig. 17.

Figs. 18 and 19 show another form in which I may make my trumpet, in this case the edges of the material are turned out and rivetted together as shown at *r* and a clip *l* is attached thereto to hold the stylus *s*.

I do not confine myself to any particular form or shape of the plug or of the tongue and the trumpet may be round, oval or any other suitable cross section.

In any of the above trumpets a single sheet or a sheet composed of more than one sheet of different materials stuck together may be used.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed I declare that what I claim is:—

1. A trumpet for phonographs or talking machines formed mainly of a sheet of sonorous material of a conical or pyramidal shape with a plug for attaching stylus fitted in its smaller end, said plug terminating in a vibratory tongue or plate, fitted to the inside of the trumpet, substantially as herein described and set forth.

2. A trumpet for phonographs or talking machines formed mainly of a sheet of sonorous material of conical or pyramidal shape with a plug for attaching stylus fitted in its smaller end, said plug terminating in a vibratory tongue or plate

Fairbrother's Improvements in Phonographs and other Talking Machines.

fitted to the inside of the trumpet said tongue having a longitudinal slit to increase vibration, substantially as herein described and set forth.

3. A trumpet for phonographs or talking machines constructed mainly of a sheet of sonorous material and means for attaching the stylus by a plug in small end of trumpet with a hole in outer end of said plug for receiving the stylus, substantially as herein described and set forth.

4. A trumpet for phonographs or talking machines constructed mainly of a sheet of sonorous material and means for attaching the stylus by a plug in small end of trumpet with hole in outer end of said plug for receiving the said stylus, said plug being slitted or cut as shown at Fig. 2 for the purpose of gripping said stylus, substantially as herein described and set forth.

5. A trumpet for phonographs or talking machines constructed mainly of a sheet of sonorous material joined together by lap folded joints, cemented or glued and means for attaching stylus, thereto substantially as herein described and set forth.

6. A trumpet for phonographs or talking machines fitted with a stylus said trumpet being formed of layers or sheets of different sonorous material stuck together substantially as herein described and set forth.

7. A trumpet for phonographs or talking machines fitted with a stylus, said trumpet being formed of one or more sheets of sonorous or resonant material with a seam or longitudinal joint, such as described in various figures of drawings hereto annexed and substantially as herein of drawings hereto annexed and substantially as herein described and set forth.

8. A trumpet for phonographs or talking machines with a normal projecting rib and a stylus attached thereto, substantially as herein described and set forth.

9. The methods of attaching the stylus to the trumpet substantially as herein described.

10. A trumpet formed by winding two layers of strip material, as shown in Fig. 15 herein and a stylus attached thereto substantially as herein described.

11. A trumpet formed by winding one strip of material with the edges overlapping into a cone or funnel shape substantially as herein described and as shown in Fig. 14 of the annexed drawings.

Dated this 13th. day of August 1902.

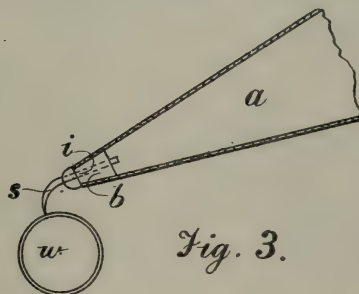
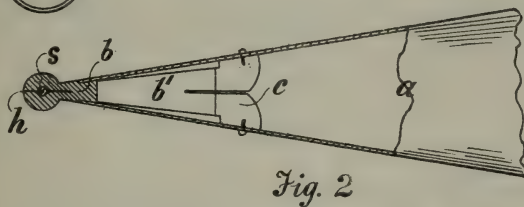
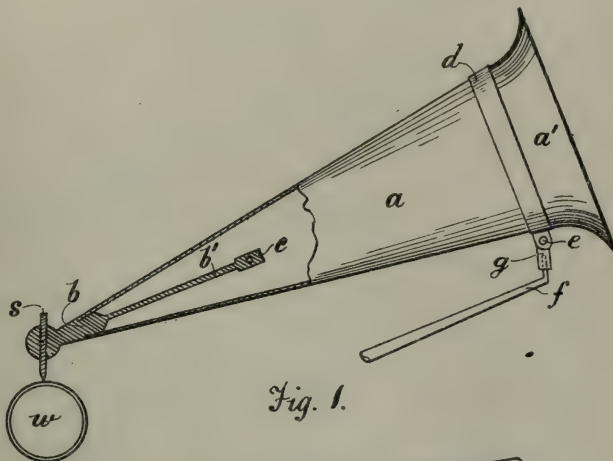
HY. FAIRBROTHER,
33 Cannon St London. E.C.

A.D. 1902. AUG. 13. N^o. 17,786.

FAIRBROTHER'S COMPLETE SPECIFICATION.

(2nd Edition)

SHEET 1.



[This Drawing is a reproduction of the Original on a reduced scale.]

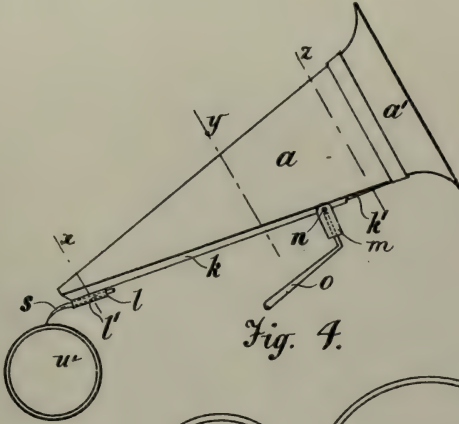


Fig. 4.



Fig. 5.



Fig. 6.

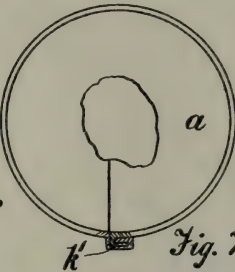


Fig. 7.

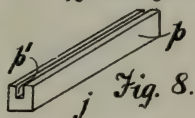


Fig. 8.

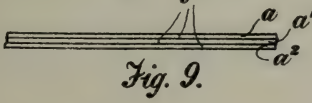


Fig. 9.

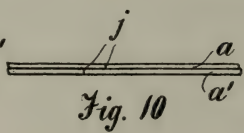


Fig. 10.

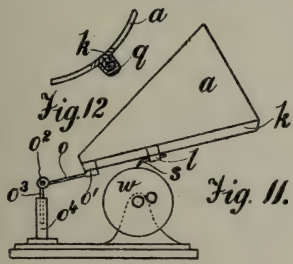


Fig. 11.

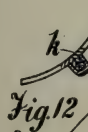


Fig. 12.

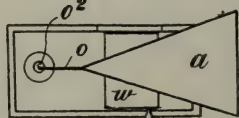


Fig. 13.

(2nd Edition)

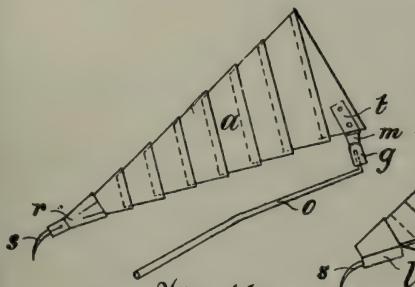


Fig. 14.

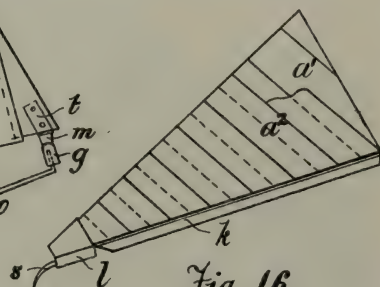


Fig. 16.

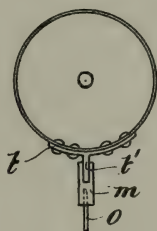


Fig. 15.

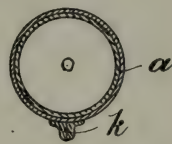


Fig. 17.

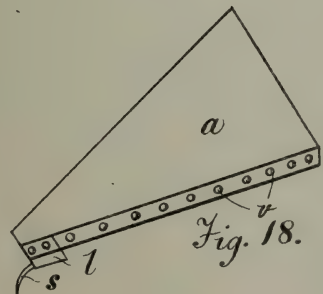


Fig. 18.

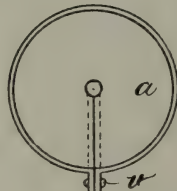


Fig. 19.

[This Drawing is a reproduction of the Original on a reduced scale.]

[Second Edition.]

N^o 20,146

A.D. 1902

*Date of Application, 15th Sept., 1902**Complete Specification Left, 9th June, 1903—Accepted, 10th Sept., 1903*

PROVISIONAL SPECIFICATION.

Improvements in connection with Horns for Phonographs, Ear Instruments and for like purposes.

I, GUSTAVE HARMAN VILLY, of 5, Longford Place, Longsight, Manchester, Bookbinder, do hereby declare the nature of this invention to be as follows:—

This invention relates to improvements in connection with horns or trumpet like sound distributors or collectors, for use upon phonographs, gramophones, and other like instruments and also for ear trumpets, fog horns, and other sound distributing and collecting devices; the object being to provide a horn or trumpet like device which can be folded when not in use so as to be capable of ready transportation and for placing within the case of the phonograph, or in the pocket of the user when it is to be applied to an ear instrument or the like.

In carrying my invention into effect in one convenient manner when making my folding horn for use particularly in connection with a phonograph or like instrument, I make the end preferably of trumpet like or curved configuration with an enlarged outer end and a smaller end at the interior of the conoidal like form. I make this enlarged and trumpet like device by employing a series of strips of paper, wood, linen, or other preferably flexible material, the inner foundations of which I prefer to make of linen or the like so as to form a hinge like connection between each of the strips the members of which I arrange so that while lying close together when extended, there is a dividing line between them about which they can be folded upon the base of linen or the like connecting web upon which the paper or other material is mounted. The longitudinal hinged edges of the flexible segments or sectors are curved in such manner that, although the segments when opened out cannot lie in the same plane, they can either be folded together in a zig zag manner so as to lie parallel to one another, or extended by springing or buckling into the requisite trumpet or bell like form. The angles formed by the meeting of the hinged segments when extended form as it were ribs giving rigidity to the trumpet form. The outer ends of the segmental like strips I prefer to protect by a bent or turned over edging of metal, making the connection rigid by pressing a portion of the strip of metal or other binding material into the edge of the paper or the like foundation.

Upon the extreme member of the series of strips thus formed into one band I provide eyelets or other clip like devices for enabling the opposite end strip to be engaged therewith and when thus engaged to form a completed trumpet like sound distributor.

Instead of arranging eyelets or hook like clips upon the outer members of the series of strips I may make one to engage with the other by forming a bead like connection or flange upon one member into which the corresponding projecting or engaging portions of the other may enter. When providing for an extension and a long funnel like carrier for the built up trumpet like end to engage with I sometimes make a conical tube the enlarged end of which engages with the inner end of the trumpet terminal while the smaller end of the cone engages with the receiver of the phonograph or enters into the rubber or other tubular or flexible connection which may be employed for use upon any particular instrument. I prefer to make this extended or carrying member

[Price 8d.]

Improvements in connection with Horns for Phonographs, Ear Instruments, &c.

for the collapsible trumpet from paper or other suitable material built up in a similar manner to that hereinbefore described, to my collapsible end, or the cone may be made in a short length in one piece or it may be made telescopic when so desired.

When providing for a flexible connection at the extreme end of the cone I attach a length of rubber or the like tubing which I bind with metal or other band at the end for the purpose of inserting it upon the funnel of the phonograph reproducer, and I stiffen the combination trumpet and funnel with flexible end by providing one or more bars of metal or the like stiffeners which support the funnel by means of elastic or other connections arranged upon the cone and suspended from the projecting stiffening hook or members carried from the metal end or binder of the flexible tube.

When constructing a funnel or tube for an ear trumpet or for a fog or speaking horn or the like, I employ the same method of building up the segments to form the expanding surface, modifying the arrangement of the inner end to suit the connection that is to be made therewith, so that when the trumpet is in use it can be extended and a large outer area exposed for the collection of sound and when not in use it can be folded each segment upon the other so as to occupy but little space.

I do not limit the application of my invention to any particular method of building up the segments or to any special curve or configuration of the same, and I vary the method of jointing and stiffening them to suit the material from which the strips are constructed and the foundation or base fabric upon which the flexible material forming the strips is secured.

Dated this 15th day of September 1902.

MARKS & CLERK

18, Southampton Buildings, London, W.C.
13, Temple Street, Birmingham, and
30, Cross Street, Manchester, Agents.

COMPLETE SPECIFICATION.**Improvements in connection with Horns for Phonographs, Ear Instruments and for like purposes.**

I, GUSTAVE HARMAN VILLY, of 5 Longford Place, Longsight, Manchester, Bookbinder, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to improvements in connection with horns or trumpet-like sound distributors or collectors, for use upon phonographs, gramophones, and other like instruments and also for ear trumpets, fog horns, and other sound distributing and collecting devices; the object being to provide a horn or trumpet-like device which can be folded when not in use so as to be capable of ready transportation and for placing within the case of the phonograph, or in the pocket of the user when it is to be applied to an ear instrument or the like.

The accompanying drawings represent one form of the invention.

Figure 1 being an elevation of the complete or erected horn.

Figures 2, 3 and 4, are detail views illustrating the manner in which the horn can be collapsed or folded.

Figure 5 is a perspective view illustrating one convenient application of the improved horn to a phonograph.

Figure 6 is a detail view on an enlarged scale.

Figures 7 and 8 are views illustrating an alternative method of folding a horn constructed according to one form of the invention.

Improvements in connection with Horns for Phonographs, Ear Instruments, &c.

- In carrying my invention into effect in one convenient manner when making my folding horn for use particularly in connection with a phonograph or like instrument, I make the end *a* of trumpet-like or curved configuration with an enlarged outer end and a smaller end at the interior of conoidal like form. I
- 5 make this enlarged and trumpet like device by employing a series of strips *o* of paper, wood, linen, or other preferably flexible material, the foundations of which I prefer to make of linen or the like so as to form a hinge-like connection *c* between each of the strips, the members *b* of which I arrange so that while lying close together when extended, there is a dividing line between
- 10 them about which they can be folded upon the base of linen or the like connecting web upon which the paper or other material is mounted. The longitudinal hinged edges *c* of the flexible segments or sectors *b* are curved in such a manner that, although the segments when opened out cannot lie in the same plane, they can either be folded together in a zigzag manner so as to lie parallel
- 15 to one another as shown in Figures 2 to 4 or extended by springing or buckling into the requisite trumpet or bell like form as shown in Figures 1 and 5. The angles formed by the meeting of the hinged segments when extended form as it were ribs giving rigidity to the trumpet form. The outer ends of the segmental like strips I prefer to protect by a bent or turned over edging *d* of
- 20 metal, making the connection rigid by pressing a portion of the strip of metal or other binding material into the edge of the paper or the like foundation.
- Upon the extreme member *e* of the series of strips *b* thus formed into one band I provide eyelets *f* or other clip-like devices for enabling snap projections *h* on the opposite end strip *g* to be engaged therewith and when thus
- 25 engaged to form a completed trumpet-like sound distributor.
- Instead of arranging eyelets or hook-like clips upon the outer members of the series of strips I may make one to engage with the other by forming a head-like connection or flange *k* upon one member into which the corresponding projecting or engaging portions of the other may enter as shewn in Figure 6.
- 30 Instead of temporarily joining the edges of the extreme members as above described, I may permanently secure them by flexible connections. The flexible covering or foundation of the horn may be made to pass right round or over all the segments. In such a case, however, the horn cannot be collapsed or folded into such a compact form as in Figure 4, but can be folded into a comparatively small and compact form as shown in Figures 7 and 8. When providing for an extension and a long funnel-like carrier for the built up trumpet-like end *a* to engage with I sometimes make a conical tube *l* the enlarged end of which engages with the inner end of the trumpet terminal *a* while
- 40 the smaller end of the cone engages with the receiver *m* of the phonograph or enters into the rubber or other tubular or flexible connection which may be employed for use upon any particular instrument. I prefer to make this extended or carrying member *l* for the collapsible trumpet from paper or other suitable material built up in a similar manner to that hereinbefore described to my collapsible end, or the cone may be made in a short length in one piece or it
- 45 may be made telescopic when so desired.
- When providing for a flexible connection at the extreme end of the cone *l*, I attach a length of rubber or like tubing *n* which I bind with metal or other band at the end for the purpose of inserting it upon the funnel *o* of the phonograph reproducer, and I stiffen the combination trumpet and funnel with
- 50 flexible end by providing one or more bars *p* of metal or the like stiffeners which support the funnel by means of elastic or other connections *q* arranged upon the cone end and suspended from the projecting stiffening hook or members *p* carried from the metal end or binder of the flexible tube *n*.
- When constructing a funnel or tube for an ear trumpet or for a fog or speaking
- 55 horn or the like, I employ the same method of building up the segments to form the expanding surface, modifying the arrangement of the inner end to suit the connection that is to be made therewith, so that when the trumpet

Improvements in connection with Horns for Phonograph^h, Ear Instruments, &c.

is in use it can be extended and a large outer area exposed for the collection of sound and when not in use it can be folded each segment upon the other so as to occupy but little space, that is to say a trumpet such as illustrated in Figures 1 to 4 would be suitable as an ear trumpet.

I am aware that it has hitherto been proposed to form conical or pyramidal horns from cardboard provided with a linen foundation, but such horns have been made up from a single flat scored sheet or from a number of flat triangular strips having straight edges. Such horns could be developed or laid out upon a flat surface. Owing to their formation, if such horns were made collapsible they would have to be sustained in their conical form by additional sustaining means, or if they were made self-sustaining they could not be made collapsible. In contradistinction to this my collapsible horn could not be made up from a single flat sheet, as each strip has to be made with curved edges, and when the strips are flexibly secured together at such curved edges the whole or complete surface so formed cannot be laid out or developed on a flat surface. My horn, owing to the curvature of the edges of the strips is self-sustaining and requires no additional stiffening or sustaining devices, although when it is desired to collapse the horn this may be effected by forcibly straightening and folding the strips one against the other in the manner hereinbefore described with reference to Figures 2, 3, and 4, or to Figures 7 and 8. The horn when erected offers a decided resistance to such straightening or folding sufficient to render it self-sustaining against all ordinary shocks liable to be encountered, but it is found that when one strip has been forcibly straightened or folded against another the equilibrium of the trumpet is destroyed and the whole may be easily collapsed.

I do not limit the application of my invention to any particular method of building up the segments or to any special curve or configuration of the same, and I vary the method of jointing and stiffening them to suit the material from which the strips are constructed and the foundation or base fabric upon which the flexible material forming the strips is secured.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A collapsible but self-sustained phonograph horn, ear trumpet or the like, comprised of a number of flexible strips having curved meeting edges, substantially as hereinbefore described.

2. A collapsible but self-sustained phonograph horn, ear trumpet or the like comprised of a number of flexible strips having curved meeting edges, a flexible foundation for said strips and means for detachably securing the two extreme strips together, substantially as hereinbefore described.

3. A phonograph horn, ear trumpet or the like comprising a rigid conical tube and a collapsible trumpet-shaped mouth telescoped thereon or otherwise secured thereto, such mouth being made up of a number of flexible strips having curved meeting edges and flexible connections at such edges, substantially as hereinbefore described.

4. An improved phonograph horn, ear trumpet or the like substantially as hereinbefore described with reference to Figures 1 to 6 of the drawings.

5. An improved phonograph horn, ear trumpet or the like substantially as hereinbefore described with reference to Figures 7 and 8 of the drawings.

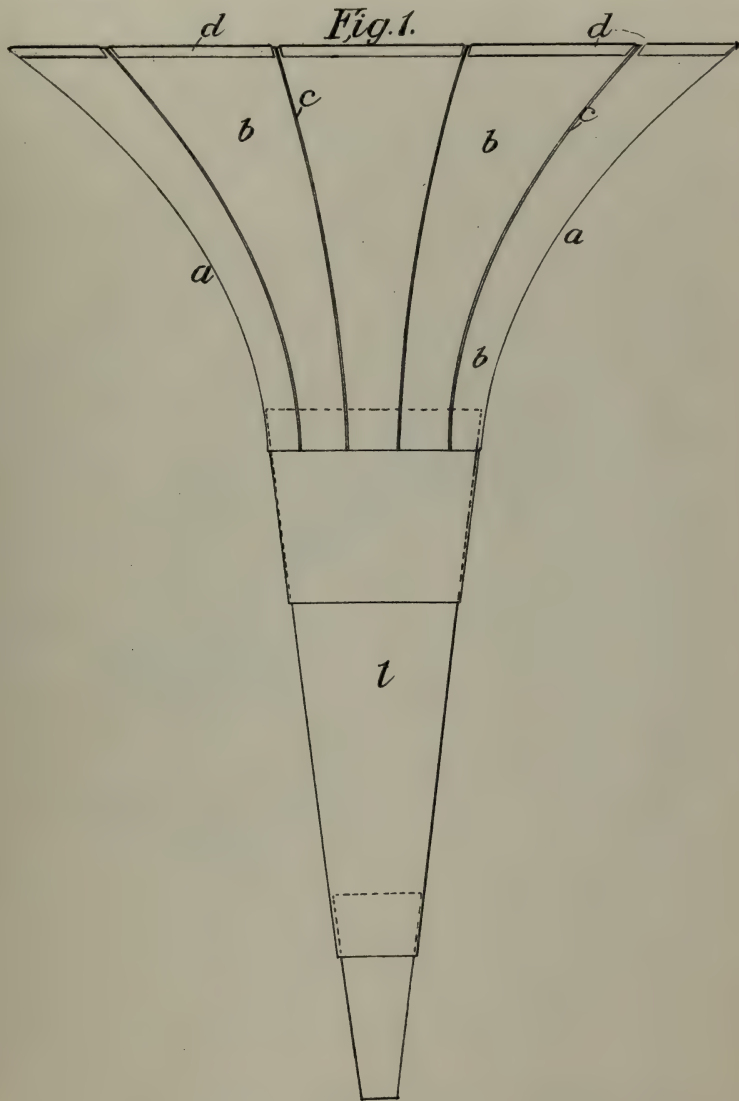
Dated this 9th day of June, 1903.

MARKS & CLERK 50

A.D. 1902. SEP. 15. N^o 20,146.
VILLY'S COMPLETE SPECIFICATION.

(2nd Edition)

SHEET 1



[This Drawing is a reproduction of the Original on a reduced scale.]

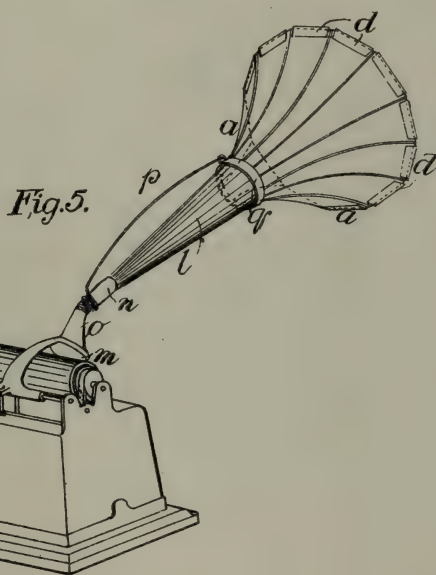


Fig. 1.



Fig. 2.



Fig. 3.

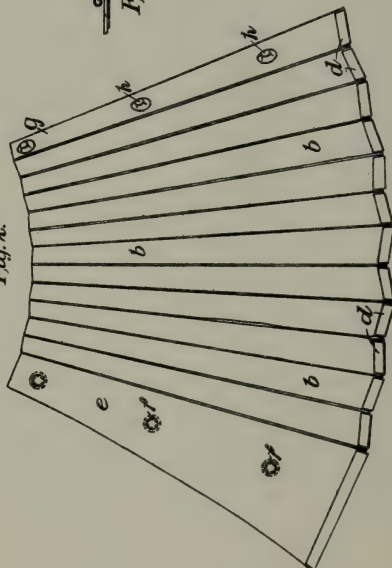
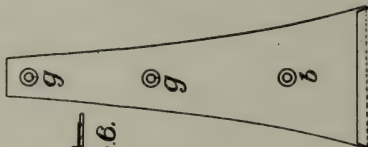


Fig. 4.



Fig. 5.



[This Drawing is a reproduction of the Original on a reduced scale]

[Second Edition.]

N^o 20,567

A.D. 1902

Date of Application, 20th Sept., 1902

Complete Specification Left, 18th June, 1903—Accepted, 20th Aug., 1903

PROVISIONAL SPECIFICATION.

“Improvements in Phonographs”

I, JOHN MESNY TOURTEL of 146A Queen Victoria Street, London E.C. Consulting Engineer, do hereby declare the nature of this invention to be as follows:—

My invention relates to improvements in or relating to phonographs. These improvements are primarily devised to render more efficient and satisfactory that type of apparatus in which a horizontal cylinder revolved by suitable apparatus, forms the support for the hollow cylindrical record, and the horn rests upon the surface of the said record by means of a stylus attached to its small end, which stylus follows the helical line traced by the recording point upon the surface of the record cylinder and thus reproduces the sounds inscribed thereon.

My improvements in this apparatus relate to the following points of the construction.

THE COVER.

In place of the exposed cylinder and partially exposed driving mechanism hitherto employed, I have devised a cover so arranged that all the working parts of the mechanism are enclosed without hindrance to their satisfactory operation. My cover which is of any convenient shape and preferably of sheet metal, is attached to the base plate of the mechanism by means of a long pin or bolt passing vertically upwards and provided with a milled nut, which nut is screwed upon the threaded end of the bolt which passes through the hole in the top of the casing. Similar apertures at the sides enable the insertion of the key and of the check screw, which prevents the revolution of the driving shaft. The end of the casing surrounding one end of the revolving cylinder is open and the record can be slipped into its place or removed therefrom without disturbing the cover. The cover is moreover slotted at the top, above the record, the said slot being of sufficient width to allow for the travel of the stylus from one end to the other of the record. By means of this cover, the working parts are efficiently enclosed, and the appearance of the apparatus is greatly improved.

THE HORN.

The horn may be made of sonorous material in the well known manner. At the small end thereof, the stylus is cemented in or fastened to a plug fitted in the point of the said horn. I find that the preferable method of attachment is to cement the said stylus by means of a fabric and gelatine, or the like cement, to the material of which the horn is composed. But any other suitable cement may be employed whereby the stylus can be securely attached to the aforesaid plug, and this in turn intimately secured to the end of the horn. A further improvement relating to the horn consists in the means of supporting the same and imparting to it a sufficient pressure to cause the stylus to rest firmly upon the record. The horn itself being extremely light in proportion to its bulk, does not afford sufficient pressure by its weight alone. I therefore secure to the preferably metallic mouthpiece of the horn, a socket

[Price 8d.]

Tourtel's Improvements in Phonographs.

working in pivots and adapted to fit over a bent wire or the like support which is arranged to fit in a hollow socket formed by perforating one of the supporting feet of the base plate. The socket attached to the horn by its pivots is also attached to it by means of a spiral spring fixed in such a position that when the apparatus is in position with the socket upon the wire support and the stylus upon the record, the said spiral spring will be extended to the required degree to give the necessary downward pressure to the horn and thereby ensure the close contact of the stylus with the record.

THE STYLUS.

This portion of the invention is improved as follows. I provide a long stylus of suitable material. This stylus may be a solid one or it may be more conical in shape than that hitherto in use, and hollow internally. In either case, the length of the stylus is considerably increased over the ordinary construction, and the top of it is formed in the shape of a disc or ring, intimately attached to the diaphragm of the horn.

THE SUPPORTS.

In my improved construction, I provide firstly a support for the point of the stylus when the apparatus is out of operation. By this means, I can without dismounting the machine or leaving the stylus resting upon the record, or without providing another support for the horn, place the instrument instantaneously out of operation and return it to the working position again, equally quickly. The support for the stylus, consists of a little cup or box of any convenient shape, preferably secured to the top of the cover at one end of the slot for the stylus, already described. The bottom of this cup or receptacle is formed of some soft material, such as soft rubber, and upon this the point of the stylus can rest without injury. The supports of the base plate are formed in the shape of legs, preferably cast in one piece with the said plate, and three in number. On one of these legs is a hollow socket provided with a milled ridge on the outside, and internally threaded to fit the threaded foot cast in one piece with the plate. This socket serves to adjust the level of the apparatus. The front foot is formed hollow and serves as the socket for the end of the bar or wire supporting the horn. The upper edge of this socket is preferably notched to receive the cross pin in said support thereby holding the same rigidly in one position. The third leg may be adjustable or not, as desired.

Although in the foregoing, I have set forth the construction as found preferable at the present time, I do not limit myself to the details therein set forth; thus for instance, I may have more than three supporting legs, or I may attach my cover otherwise than by the long bolt described, and other alterations of design may be made, which are within the capacity of an experienced mechanic. But such alterations of the detail of the apparatus will remain within the scope of my invention herein set forth.

Dated the 20th day of September 1902.

W. P. THOMPSON & Co.
322, High Holborn, London, W.C.
Patent Agents.

COMPLETE SPECIFICATION.

"Improvements in Phonographs".

I, JOHN MESNY TOURTEL of 146A Queen Victoria Street, London E.C. Consulting Engineer, do hereby declare the nature of this invention and in what

Tourtel's Improvements in Phonographs.

manner the same is to be performed to be particularly described and ascertained in and by the following statement:—

My invention relates to improvements in or relating to phonographs. These improvements are primarily devised to render more efficient and satisfactory that type of apparatus in which a horizontal cylinder revolved by suitable apparatus, forms the support for the hollow cylindrical record, and the trumpet rests upon the surface of the said record by means of a stylus attached to its small end, which stylus follows the helical line traced by the recording point upon the surface of the record cylinder and thus reproduces the sounds inscribed thereon.

In order to make my invention more clear, I have illustrated it in the accompanying drawings in which

Figure 1 shews a side elevation of the apparatus in the operative position.

Figure 2 shews a plan view of the same.

Figure 3 shews an isometric view on a reduced scale of the cover.

Figure 4 illustrates a section of the trumpet on the line X—Y of Figure 1.

Figure 5 shews the stylus on an enlarged scale in section.

Figure 6 shews another construction of stylus, in section through the stylus and the resonator drum to which it is attached.

In these drawings, A indicates the base plate, B the detachable cover, C the cylindrical record, D the trumpet, E the trumpet support. The base plate A may be of cast metal and supports a mechanism for giving rotary motion to the cylinder 1, on which the cylindrical record C can be slipped; the aforesaid mechanism forming in itself no part of my invention, is not specifically illustrated in the drawings, it may be of any suitable or known type. The base

plate A has preferably two rear legs and one front leg arranged as shewn in dotted lines in Figure 2. One of the rear legs 2 is an ordinary cast iron leg. The other one is preferably a threaded bolt and somewhat shorter than its corresponding leg, but covered with a hollow socket 3 provided with a milled

ridge or other convenient means for readily revolving it, and threaded internally to screw upon the threaded leg 2. By this means, an easy adjustment for levelling the apparatus is provided. The front leg 4 is hollow and forms a

socket for the trumpet support E. This trumpet support is preferably constructed (as shewn in Figure 1 of the drawings) with a little cross pin 5 adapted

to engage in a corresponding notch in the top of the hollow socket 4, thereby holding the rod or wire E firmly in place. Over the upper end of the rod E the socket 6 is arranged to fit. This socket is attached to a rim 7 of the

trumpet D by means of the pivots 8. The socket 6 is attached to the trumpet D by means of the spiral spring 9 for the purpose hereinafter described.

The novelty of the construction of the trumpet resides in the arrangement for strengthening the same by the reinforcement of its lower part in the manner especially illustrated in Figure 4. The material of the trumpet which

may be conveniently celluloid, or any other sufficiently light and resonant material, is curved to join at the edges into the form required, said join being

in the shape of a V-shaped ridge running the entire length of the trumpet from the lower edge of the rim to the junction with the stylus. By this construction, the need of any special strengthening bars or reinforcement of

other materials is obviated.

The stylus shewn in Figure 1 and sectionally in Figure 5 is formed of a

curved tube terminating in a point and fitting in a wooden plug in the apex of the trumpet. Another form of stylus is shewn in section in Figure 6. It is

preferably of a hard material such as glass or metal. It is formed of greater length than the stylus hitherto in use. To diminish its weight and render it

more sensitive, it is formed hollow and is attached to the drum 12 by means of

the annular or disc-shaped head 11. The junction of the drum or resonator 12 to the trumpet D is preferably by means of a fabric soaked in gelatine, cement

or glue, but any other suitable cement may be employed.

Tourtel's Improvements in Phonographs.

The cover B is so contrived that it can be removed from the apparatus or replaced without interfering with any of the working parts. Its general construction is illustrated in Figure 3.

The end of the cylinder 1 is arranged to project slightly through the circular aperture 13 leaving a convenient space for the manipulation of the cylindrical record which can then be inserted or exchanged without moving the cover. Above the record, there is provided the slot 14 which accords access to the surface of the record for the stylus. At one side of the cover is provided the receptacle 15 having a soft pad or plug of rubber or the like at the bottom thereof, and adapted to receive the point of the stylus when the instrument is out of operation. By means of this holder, the ordinary supporting fork and other more complicated devices are rendered unnecessary. The casing is formed preferably in one piece and is secured to the base plate A by means of a single bolt 16 having a threaded end and a milled nut 17 thereon. Other apertures are provided for the insertion of the winding key 18 on the one side, and of the check screw 20 on the other.

The general operation of the phonograph is well known and need not be here described.

The record having been placed in position upon the cylinder 1, the cover B being in place and the driving mechanism started, the stylus 10 is lifted out of its receptacle 15 and put in place through the slot 14 of the cover. In addition to the weight of the trumpet D, the stylus is further impelled against the surface of the record by the action of the spiral spring 9, according to the strength of which the stylus will be more or less pressed upon the revolving record. The sounds caused by the inscriptions on the record are thus transmitted through the resonator to the trumpet and given forth. The apparatus can be easily taken to pieces for packing or removal and as easily reinstated, the cover which entirely protects the moving parts being attached to the base by only one screw.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed. I declare that what I claim is:—

1. In a phonograph: a casing covering the mechanism and record having an aperture corresponding to the end of the record through which the said record can be removed or replaced without disturbing the casing, substantially as set forth.
2. In a phonograph: a casing adapted to cover the mechanism and the record whilst allowing the record to be interchanged without disturbing the casing, said casing secured to the base of the mechanism by a single long bolt and provided with a pad or support for the stylus of the trumpet when out of contact with the record, substantially as set forth.
3. In a phonograph: the adjustable support E for the trumpet socketted in the hollow front leg of the base, substantially as set forth.
4. The combination and arrangement of parts forming the improved phonograph constructed and operating substantially as described and illustrated in the accompanying drawings

Dated the 18th day of June, 1903.

W. P. THOMPSON & Co.,
322, High Holborn, London, W.C., and
6 Lord Street, Liverpool
Patent Agents for the Applicant.

A.D. 1902. SEP. 20. N^o 20,567.
TOURTEL'S COMPLETE SPECIFICATION.

(2nd Edition)

SHEET 1.

[This Drawing is a reproduction of the Original on a reduced scale]

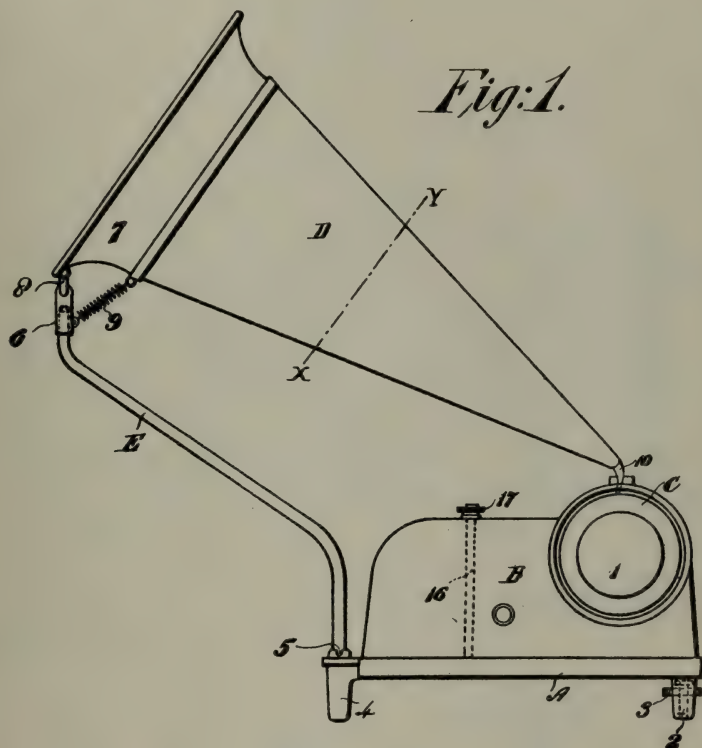
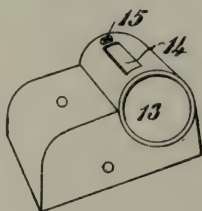
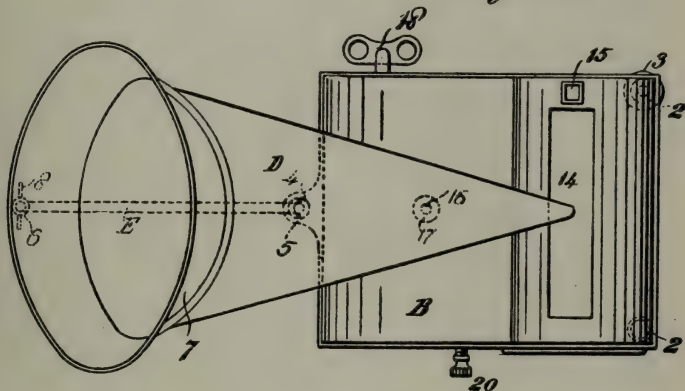
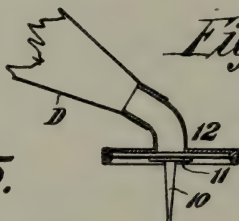


Fig. 3.*Fig. 2.**Fig. 4.**Fig. 5.**Fig. 6.*

N^o 5186



A.D. 1903

Date of Application, 5th Mar., 1903

Complete Specification Left, 19th Nov., 1903—Accepted, 31st Dec., 1903

PROVISIONAL SPECIFICATION.

"Improvements in Trumpets for Gramophones, Phonographs and the like".

I, **FREDERICK CHARLES COCKMAN**, of 5 Curzon Road, Muswell Hill, in the County of London, Journalist, do hereby declare the nature of this invention to be as follows:—

My invention relates to trumpets for gramophones, phonographs, and the like. Heretofore such trumpets have usually been made of sheet metal and they have consequently possessed very inferior resonant qualities and in most cases a very objectionable metallic sound which obscures the qualities and characteristics of the sound of the instrument or voice whose tones are being reproduced. Sometimes papier mache trumpets have been employed, but these are dull and otherwise objectionable. I have found that by making the trumpet of wood, the qualities of the tone are greatly improved, metallic noises are avoided, distinct articulation is obtained, and minute vibrations are brought out, besides which a trumpet is obtained whose qualities improve with age.

I preferably make the trumpet from pine wood such as is used for violins, mandolins, and the like, and I find it very advantageous to cut the wood in what is technically known as "on the quarter" so that the age rings form the grain. I prefer also to reduce the thickness of the trumpet towards the large end in order to more powerfully re-inforce the vibrations of the air in the vicinity of the large end. A suitable mode of construction is to make the trumpet in sections or longitudinal taper strips glued together at their edges.

Dated this 5th day of March 1903.

D. YOUNG & Co.,
11 & 12 Southampton Buildings, London, W.C.,
Agents for the Applicant.

COMPLETE SPECIFICATION.

"Improvements in Trumpets for Gramophones, Phonographs and the like."

I, **FREDERICK CHARLES COCKMAN**, of 5 Curzon Road, Muswell Hill, in the County of London, Journalist, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

My invention relates to trumpets primarily intended for use in connection with phonographs, and gramophones, but applicable also to other sound producing instruments. Heretofore such trumpets have usually been made of sheet metal and they have consequently possessed very inferior resonant qualities and in most cases a very objectionable metallic sound which obscures the qualities and characteristics of the sound of the instrument or voice whose tones are being reproduced. Sometimes papier maché trumpets have been employed, but these are dull and otherwise objectionable. Wooden trumpets have also been used, but no attention has been paid to the construction of such trumpets

[Price 8d.]—

Cockman's Improvements in Trumpets for Gramophones, Phonographs and the like.

to bring out the musical qualities thereof, and hence the result has not hitherto been satisfactory. I have found that by making the trumpet of wood, cut as it is technically called "on the quarter", the qualities of the tones are greatly improved, metallic noises are avoided, distinct articulation is obtained, and minute vibrations are brought out, besides which a trumpet is obtained whose qualities improve with age. This construction constitutes the novel feature of my invention.

I preferably make the trumpet from pine wood such as is used for violins, mandolins, and the like. In wood cut "on the quarter" that is to say, so cut that each sheet or strip radiates from the centre of the tree or log, a straight grain or reed obtains formed by the age rings which ensure perfect vibration. I prefer to reduce the thickness of the trumpet towards the large end in order to more powerfully re-inforce the vibrations of the air in the vicinity of the large end. A suitable mode of construction is to make the trumpet in sections or longitudinal taper strips glued together at their edges.

Referring to the accompanying drawing, Figure 1 is a longitudinal central section of a conical trumpet constructed according to my invention, and Figure 2 is a transverse section taken on the line x, x of Figure 1.

The trumpet A is made from a number of tapering strips or sections of wood a, a glued together at their edges. I have shown six such strips but there may be fewer or more than six. Moreover I have shown curved strips to produce a trumpet of circular section, but they may be flat, thereby producing a trumpet with any desired number of sides. The trumpet when completed is varnished with a suitable varnish which does not set too hard and so interfere with the vibrations of the wood. I prefer that the material of the trumpet shall have gradually decreasing thickness from the neck towards the large end or mouth, in order that it may act by its own vibrations to re-inforce the vibrations of the air in the vicinity of the large end. The strips of wood forming the trumpet are as before stated cut "on the quarter" and in this way the trumpet is treated like a musical instrument.

I do not confine myself to the use of strips of wood having straight edges as shown, as in some cases the edges may be arranged spirally or circularly around the trumpet.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:

1. A trumpet built up of strips of wood cut "on the quarter" so as to obtain a straight grain, for the purpose specified.

2. A phonograph, gramophone or like trumpet constructed substantially as described and shown, for the purpose specified.

Dated this 17th day of November, 1903.

D. YOUNG & Co.,
11 & 12 Southampton Buildings, London, W.C.,
Agents for the Applicant.

(2nd Edition.)

Fig. 1.

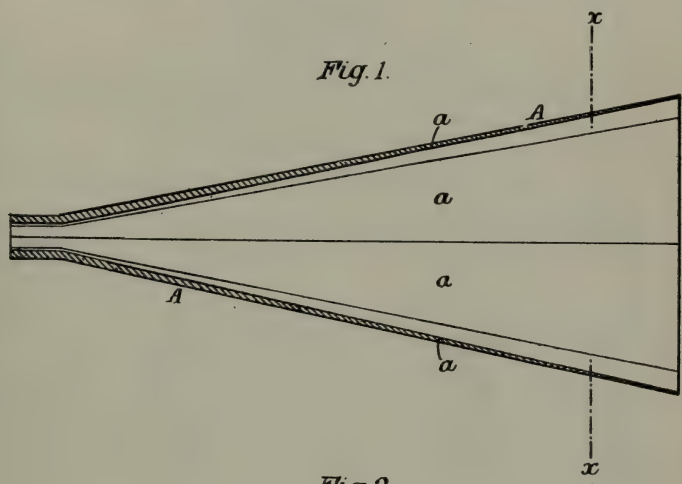
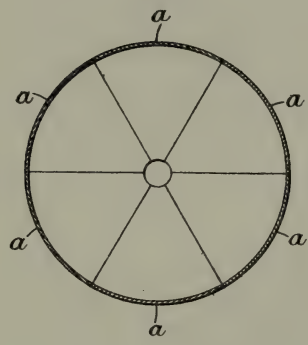


Fig. 2.



[This Drawing is a reproduction of the Original on a reduced scale.]

[Second Edition.]

N^o 14,730

A.D. 1903

Date of Application, 2nd July, 1903

Complete Specification Left, 24th Mar., 1904—Accepted, 28th Apr., 1904

PROVISIONAL SPECIFICATION.

Improvements in Phonographs and the like.

We, JOHN MESSEY TOURTEL, of Wardrobe Chambers, 146A, Queen Victoria Street, in the City of London, and GEORGE LEWIS HOGAN, of 27, Chancery Lane, in the City of London, Engineers, do hereby declare the nature of this invention to be as follows:—

- 5 Our invention relates more particularly to that class of phonographs in which the sound writing is recorded in the sides or walls of a groove which may be on a disc or cylinder of suitable material such as vulcanite, celluloid or wax, and from which such sound writings may be reproduced by transmitting vibrations corresponding to them through a stylus to a diaphragm or trumpet of a
 10 sonorous nature by causing the groove to move or rotate in such a manner that the sound writings will be traversed by the stylus which may rest in the groove, the point of the stylus resting on the bottom of the groove of the sound writing. The difficulty arising in former types of machines of this sort is the manifestation of a grating noise due to the bottom of this groove not being perfectly
 15 polished and smooth which necessarily imparts a vibration to the stylus. One object of our invention is to utilize the vibrations from the sound writings, and at the same time prevent the foreign or other vibrations from affecting the reproducer or sonorous mechanism. This we accomplish by providing a free flexible motion or movement of the stylus in the direction of the foreign or
 20 objectionable vibrations such as would result from the bottom of the groove of the sound writing on an ordinary disc record, and at the same time maintaining a rigidity between the stylus point and the reproducer with respect to the sound writings or vibrations from the sides of the groove. We have obtained excellent results by forming a trumpet of celluloid provided at its larger end
 25 with a flange and means of support so as to allow the trumpet a free lateral and vertical motion about its support, and providing the apex of the trumpet with an inner plug tapped and threaded so as to engage a threaded rod, to which rod is attached one end of a
 30 flat flexible spring, the other end of this spring is provided with an enlargement tapped and fitted with a set screw to receive and hold the stylus, which may be a pointed steel pin, the plane of the stylus through the axis of the conical trumpet being approximately normal to the flat side of the spring. The rod of the stylus holder that screws into the trumpet is provided with a jamb nut for tightening against the block or plug in the apex of the trumpet. The apex of the trumpet is provided with a short metal strengthening cap on
 35 the outside. The trumpet is so fixed that the seam of its joint will be on the side of the trumpet when mounted; this offers rigidity in the direction of the vibrations from the sound writings. This joint may be a crease folded joint or other suitable reinforcement.

[*Printed* 8d.]

Tourtel and Hogan's Improvements in Phonographs and the like.

While we have described this mechanism for transmitting vibration from sound writings to a vibrating trumpet, it is obvious that it is equally applicable for use with a diaphragm and sound box, as the same flexibility can be provided in the stylus support in such a manner that only the sound writing vibrations will be reproduced. This may also be accomplished by the use of a stylus made of a needle-shaped piece of metal of the ordinary type of steel stylus, and flattened out in its central portion until it acts as a flexible spring to motion from the bottom of the groove of the sound writing and offers rigidity to the motions of the sound writings when the stylus is fixed so that its flat portion covers the groove of the sound writings. It is also obvious that other means besides a flexible flat spring may be provided to effect the purposes herein set forth, and in accordance with our invention we may construct in other ways than those previously described a stylus or stylus support, or both, flexible in one direction to a sufficient extent to render it useless as a conductor of sound vibrations from motion in that direction, and effective as a conductor of vibrations corresponding to sound writings from motions in another approximately normal direction.

Dated this Second day of July, 1903.

JOHN MESNY TOURTEL.
GEORGE LEWIS HOGAN.

COMPLETE SPECIFICATION.**Improvements in Phonographs and the like.**

We, JOHN MESNY TOURTEL, of Wardrobe Chambers, 146A, Queen Victoria Street, in the City of London, and GEORGE LEWIS HOGAN, of 27, Chancery Lane, in the City of London, Engineers, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

Our invention relates more particularly to that class of phonographs in which the sound writing is recorded in the side or walls of a groove which may be on a disc or cylinder of suitable material such as vulcanite, celluloid or wax, and from which such sound writings may be reproduced by transmitting vibrations corresponding to them through a stylus to a diaphragm or trumpet of sonorous nature by causing the groove to move or rotate in such a manner that the sound writings will be traversed by the stylus which may rest in the groove, the point of the stylus resting on the bottom of the groove of the sound writing. The difficulty arising in former types of machines of this sort is the manifestation of a grating noise due to the bottom of this groove not being perfectly polished and smooth which necessarily imparts a vibration to the stylus. One object of our invention is to utilise the vibrations from the sound writings, and at the same time prevent the foreign or other vibrations from affecting the reproducer or sonorous mechanism. This we accomplish by providing a free flexible motion or movement of the stylus in the direction of the foreign or objectionable vibrations such as would result from the bottom of the groove of the sound writing on an ordinary disc record, and at the same time maintaining a rigidity between the stylus point and the reproducer with respect to the sound writings or vibrations from the sides of the groove. With reference to the accompanying drawings:—

Figure 1 shows the application of our invention to a resonant trumpet,

Figures 2 and 3 illustrate its application to a reproducing needle,

Figures 4 and 5 illustrate its application to the stylus support of a gramophone sound-box,

Tourtel and Hogan's Improvements in Phonographs and the like.

Figures 6, 7 and 8 illustrate various details of the stylus holder shown in Figure 1.

Similar letters are used throughout to denominate similar parts in the various figures.

- 5 A is a trumpet of celluloid or other suitable resonant material provided at its larger end with a flange B having a socket C hinged at D. The trumpet has a free lateral and vertical motion about its support E. The apex of the trumpet is provided with an inner plug F tapped and threaded so as to engage a threaded rod G to which rod is attached one end of a flat flexible spring H. The other
10 end of the spring H is provided with an enlargement J tapped and fitted with a set screw K to receive and hold the stylus L, which may be a pointed steel pin, the plane of the stylus through the axis of the conical trumpet being approximately normal to the flat side of the spring. H is a piece of rubber or similar material secured above the spring H. The rod G of the stylus holder
15 that screws into the trumpet is provided with a jamb nut M for tightening against the block or plug F in the apex of the trumpet. The apex of the trumpet is provided with a short metal strengthening cap N on the outside. The trumpet is preferably so arranged that the seam of its joint will be on the side of the trumpet when mounted: this offers rigidity in the direction of the
20 vibrations from the sound writing. This joint may be a crease folded joint or other suitable reinforcement.

- While we have described this mechanism for transmitting vibrations from sound writings to a vibrating trumpet, it is obvious that it is equally applicable
25 for use with a diaphragm and sound box as the same flexibility can be provided in the stylus support P (Figures 4 and 5) by thinning it at P' in such a manner that only the sound writing vibrations will be reproduced. This may also be accomplished by the use of a stylus R (Figures 2 and 3) made of a needle-shaped piece of metal of the ordinary type of steel stylus and flattened out in its central
30 portion Q until it acts as a flexible spring to motion from the bottom of the groove of the sound writing and offers rigidity to the motions of the sound writings when the stylus is fixed so that its flat portion covers the groove of the sound writings. It is also obvious that other means besides a flexible flat spring may be provided to effect the purposes herein set forth, and in accordance with
35 our invention we may construct in other ways than those previously described a stylus or stylus support or both flexible in one direction to a sufficient extent to render it useless as a conductor of sound vibrations from motion in that direction and effective as a conductor of vibrations corresponding to sound writings from motions in another approximately normal direction.

- 40 Having now particularly described and ascertained the nature of our said invention, and in what manner the same is to be performed, we declare that what we claim is:—

1. The improvements in phonographs substantially as described.
2. The combination with a phonograph of a stylus or stylus holder which is flexible in one direction to a sufficient extent to render it useless as a conductor
45 of sound vibrations from motion in that direction and effective as a conductor of vibrations corresponding to sound writings from motion in another and approximately normal direction substantially as described and illustrated.

Dated this 24th day of March, 1904.

JOHN MESNY TOURTEL.
GEORGE LEWIS HOGAN.

1903. JULY 2. N° 14,730

TOURTEL & another's COMPLETE SPECIFICATION.

(2 SHEET)

(2nd Edition)

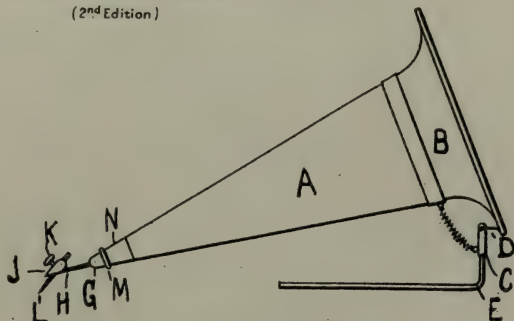


Fig. 1.

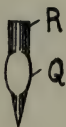


Fig. 2.



Fig. 3.

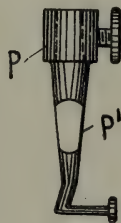


Fig. 4.

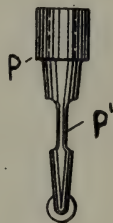


Fig. 5.

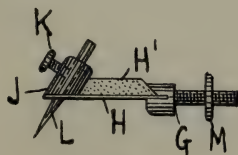


Fig. 6.



Fig. 7.

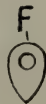


Fig. 8.

[This Drawing is a reproduction of the Original on a reduced scale.]

MEMOIRE DESCRIPTIF

annexé au Brevet d'Invention de quinze ans
pris le 23 Juin 1900

par

GUERRERO (José)

pour

“CORNET EN BOIS POUR ACCROITRE LA
VOIS ET LES SONS DES PHONO-
GRAPHES”

délivré le 9 Octobre, 1900.

No. 301583.

Notre cornet ou porte-voix phonographique est construit par des feuilles ou lames en bois très mince (un millimètre environ) découpées sous une forme convenable, juxtaposées latéralement et placées au long du cornet, dès la partie la plus étroite, ou soit l'origine du, coude *N F* (fig. 1), vers la partie plus large, soit la bouche ou cloche *N'* du cornet.

Dans la fig. 1 *A* montre les lames en bois placees en spirale et collées par leurs côtés avec de la colle forte qui forment la première couche du cornet.

O, O, montrent les lames en bois mises en sens contraire aux feuilles précédentes *A*, lesquelles constituent la seconde couche du cornet. Ces lames sont collées comme les autres par leurs côtés et collées aussi avec celles-ci, c'est-à-dire, les deux couches sont collées ensemble, mais en se croisant les fibres de leurs respectives feuilles, tel que l'indique la fig. 5.

Les figs. 2 et 3 représentent respectivement la vue latérale et la vue de face du cornet déjà fini, permettant de voir la disposition extérieure et intérieure

des plaques minces en bois qui forment notre système de cornet phonographique.

La fig. 4 montre le mode de construction du coude du cornet. *S* en est la vue de face; *D* la vue latérale, et *R R.*, le développement des pièces minces en bois qui constituent le coude. On commence pour coller par ses champs les bagues ou anneaux circulaires *P, P,* qui constituent la première couche; puis on place cette première couche avec les lames en bois *R* découpées dans la forme convenable, c'est-à dire, on place et on colle ces feuilles *R* sur les anneaux *P*, mais en recouvrant la jonction des dits anneaux et collant aussi les lames *R* par son champ dont la jonction se trouvera dans l'emplacement indiqué par les flèches. Il va sans dire que ce coude est raccordé et collé aussi au corps du cornet, tel qu'il le montre la fig. 2 du dessin ci-annexé.

EN RESUME, je revendique comme de mon exclusive propriété: un nouveau système de cornet ou porte-voix phonographique en bois pour accroître la voix et les sons des phonographes; essentiellement caractérisé:

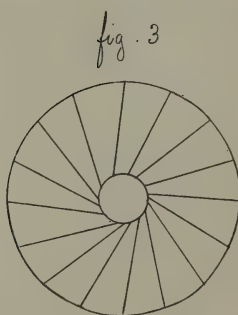
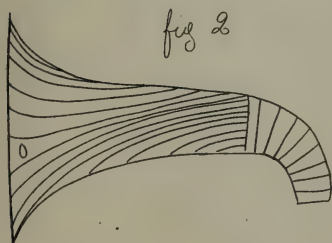
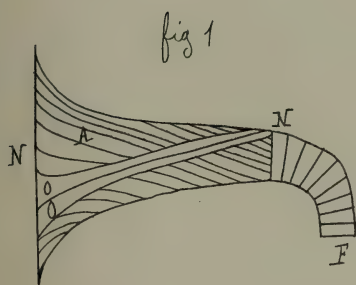
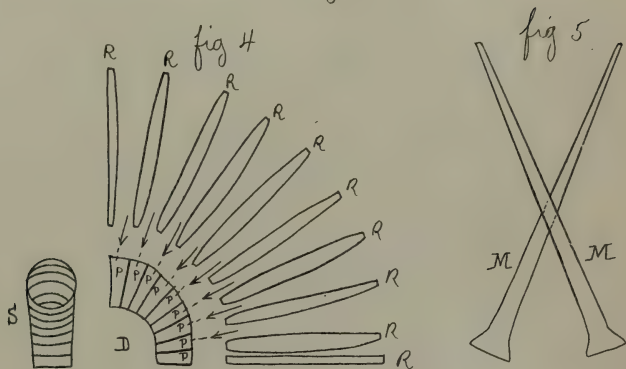
1°. Par la construction spéciale du cornet formé par deux ou plusieurs couches de lames en bois dûment collées et qui donnent l'épaisseur voulu.

2°. Par le croisement des fibres du bois que chaque couche forme avec celles de la couche précédents.

3°. Par le collage par leur champ avec de la colle forte des lames qui constituent le corps du cornet, ainsi que celui des feuilles qui en forme d'anneaux constituent le coude du dit cornet.

Je me réserve le droit de construire mon cornet en bois dans la forme et dimensions nécessaires pour son application aux phonographes de tout genre, de toute grandeur et de tout système.

Brevet Guerrero n° 301 583 du 22 juin 1900



Descriptive memoir annexed to patent of invention for 15 years, taken June 23, 1900, by Jose Guerrero, for "Horn of Wood to Increase the Voice and Sounds of Phonographs," delivered October 9, 1900.

No. 301,583.

Our horn or phonographic sound-carrier is constructed of sheets or strips of wood, very thin (about 1 millimeter), cut in a suitable form, laterally disposed and placed along the horn, from the part the most narrow, or the beginning of the elbow NF (fig. 1), towards the largest part, either the mouth or bell N of the horn.

In fig. 1, A shows strips of wood, placed spirally and glued along their sides with a strong glue, which form the first layer of the horn.

O, O, show strips of wood placed in a contrary manner upon the preceding strips A, which constitute the second layer of the horn. These strips are glued, like the others, along their sides and glued also with the latter, that is to say, the two layers are glued together, but the fibres of their respective strips cross as indicated in fig. 5.

Figs. 2 and 3 show respectively a lateral view and a front view of the finished horn, permitting to be seen the exterior and interior dispositions of the thin plates of wood forming our design of phonographic horn.

Fig. 4 shows the mode of construction of the layer of the horn. S is a front view; D a lateral view, and R, R, the unfolding of the thin pieces of wood which constitute the elbow. One commences by gluing on

their surfaces the circular or annular rings P, P, which constitute the first layer; then one assembles this first layer with the strips of wood R cut in a suitable form, that is to say, one assembles and glues these strips R upon the rings P, but in joining the said rings and gluing also the strips R upon their surface the place of union will be as indicated by the arrows. It goes without saying that this elbow is made even with and glued also to the body of the horn, as shown in fig. 2 of the drawing hereto annexed.

Summing up, I claim as my exclusive property: a new design of horn or phonographic sound-carrier of wood to increase the voice and the sounds of phonographs, characterized essentially:

1st. By the special construction of the horn formed by two or more layers of strips of wood duly glued which give the desired thickness.

2d. By the intersection of the fibres of the wood which each layer makes with those of the preceding layer.

3d. By the gluing with strong glue, upon their surface, of the strips which constitute the body of the horn, as well as that of the sheets which in the form of rings constitute the elbow of the said horn.

I reserve to myself the right to construct my horn of wood in the manner and dimensions necessary for its application to phonographs of every kind, of every size and of every design.

OFFICE NATIONAL DE LA PROPRIÉTÉ INDUSTRIELLE.

BREVET D'INVENTION

du 17 février 1902.

XII. — Instruments de précision.

N° 318742

2. — APPAREILS DE PHYSIQUE ET DE CHIMIE.

Brevet demandé le 17 février 1902 par **M. TURPIN**, pour un système de cornet en bois pour phonographe. (Délivré le 4 juillet 1902 ; publié le 25 octobre 1902.)

PRINCIPE :

Jusqu'ici les cornets des phonographes servant, soit à l'enregistrement, soit à la reproduction, sont de quatre espèces :

- 5 1° En carton ;
- 2° En celluloid ;
- 3° En verre ou en cristal ;
- 4° En métal : cuivre, fer-blanc, nickel, aluminium, maillechort, etc.

10 Le carton, le celluloid ou fibroïne, ne donnent que de très mauvaises vibrations. Le cristal n'a pas eu de succès parce que les vibrations sont trop aiguës et que les cornets sont trop lourds et trop fragiles.

15 Les cornets en métal sont, en somme, les seuls employés.

Ces cornets donnent, quoi que l'on fasse, des sons métalliques nasillards qui enlèvent tout l'intérêt que pourrait avoir le phonographe en lui-même, car il est impossible de reconnaître les voix enregistrées, parce que les sons sont dénaturés. C'est ainsi que le violon ne peut être rendu convenablement par un phonographe ; que les notes élevées d'une
25 bonne chanteuse légère sont dénaturées et accompagnées d'un sifflement métallique qui trouble l'ensemble, que les morceaux d'orchestre sont confus, etc.

Tous ces inconvénients qui nuisent absolument à la phonographie et qui ont empêché que le phonographe, remarquable à plus d'un point de vue, ne prenne le caractère sérieux et scientifique qu'il devrait avoir, sont dus à la

nature métallique des cornets qui transforment en une voix métallique la voix la plus pure, 35 d'abord à l'enregistrement et, ensuite, à la reproduction, d'où, finalement, une voix de polichinelle sur tous les tons et pour toutes les voix.

Comme conséquences de cet état de choses, 40 le phonographe restant un simple et souvent désagréable joujou, au lieu d'être un appareil reproduisant fidèlement les sons tels qu'il les aurait eus, c'est-à-dire un instrument parfait permettant de reconnaître facilement les voix 45 enregistrées.

En recherchant les causes de cette grave et perturbante défectuosité, j'ai été frappé, dès le début de mes recherches, que l'on se soit ingénié, en effet, à faire passer une magnifique 50 voix de cantatrice ou de ténor, dans un cor de chasse ou dans une trompette, pour enregistrer, d'abord et, ensuite, pour reproduire les morceaux de chant. L'effet obtenu, d'une manière continue et sans désemparer, c'est-à-dire sans 55 y avoir remédié depuis l'invention du phonographe, ne pouvait rien avoir de surprenant si on étudie scientifiquement le sujet.

Il est bien évident qu'un solo de violon, de violoncelle, de hautbois ou de voix humaine, 60 étant émis dans une trompette et reproduit à l'aide d'une trompette métallique, sera complètement perdu et dénaturé par la discordance des vibrations et la cacophonie qui résultent des vibrations asynchrones qui se produisent. 65

Ce fait étant établi, par mes expériences,

j'ai recherché comment on pourrait obvier à ces défauts, et après avoir essayé différents systèmes j'ai reconnu que le bois convenablement travaillé et choisi pouvait remédier à la 5 défectuosité des phonographes actuels et rendre ces appareils parfaits. Le bois, en effet, donne des vibrations si naturelles qu'il s'accorde avec tous les instruments et surtout avec la voix humaine qu'il permet d'enregistrer et de rendre 10 avec une douceur, une netteté et une fidélité extrêmes et les nuances les plus délicates. On sait, en effet, que les instruments en bois, soit à cordes, soit à vent, sont ceux qui se rapprochent le plus de la voix humaine, tels sont le 15 violon, le violoncelle, le hautbois, etc. Le bois est donc de toutes les matières celle qui convient le mieux à la confection d'un cornet phonographique, comme je l'ai reconnu.

D'ailleurs, je ferai remarquer ici, et c'est 20 très important, au point de vue du principe, que dans l'industrie des phonographes on n'a pas l'air de se préoccuper d'obtenir des sons purs et mélodieux, mais seulement beaucoup de bruit. Du bruit, c'est à quoi visent tous les 25 cornets en fer-blanc, en aluminium, etc. On ne s'est occupé de leur forme en trompette ou en cor de chasse qu'en vue d'obtenir plus de force. Seulement au fur et à mesure que le bruit augmente, les sons nasillards et métalliques augmentent aussi et à tel point que dans 30 un morceau d'orchestre on distingue seulement les gros instruments de cuivre tandis que tous les instruments délicats, violons, harpes, violoncelles, hautbois, etc., se confondent en un sifflement désagréable et comparable à une 35 machine qui grippe, à tel point que l'on croit, lorsque l'oreille n'y est pas faite, que c'est le mécanisme du phonographe qui en est cause.

40 Un appareil, même très ordinaire, muni d'un cornet en bois de mon système, donne un enregistrement et une reproduction très supérieurs à ceux obtenus avec des cornets métalliques.

45 Les sons émis par les instruments de cuivre, au lieu d'être exaltés comme avec un cornet métallique, sont rendus fidèlement, plutôt un peu adoucis en laissant dominer le chant.

Tels sont les principes, études et observations 50 qui m'ont amené à appliquer le bois de la manière suivante, à l'industrie des phonographes.

PROCÉDÉS DE CONSTRUCTION :

Pour que les cornets en bois donnent satisfaction il faut qu'ils soient en bois très minces 55 et très secs, convenablement choisis et travaillés. Les formes convenables ainsi que la légèreté de l'appareil présentent de grandes difficultés que j'ai tournées de la manière suivante :

60

1° Cornets en bois tourné.

Ce genre de cornets, le premier qui se présente à l'esprit, est très difficile à obtenir à cause des grandes dimensions et du peu d'épaisseur nécessaires qu'il faut atteindre. En 65 outre tous les bois ne permettent pas d'arriver au résultat. L'acajou, le palissandre, l'acacia, le noyer sont chers, on les trouve difficilement en gros blocs et ils sont cassants. Le bois blanc se désagrége, le hêtre ou le tulipier d'Amérique 70 donnent les meilleurs résultats.

Pour obtenir un cornet tourné, on commence par tourner l'extérieur du bloc de bois à la forme voulue, puis on ébauche l'intérieur suivant le profil extérieur désiré. Ensuite on 75 fixe la pièce ainsi préparée à l'extérieur et ébauchée à l'intérieur, B, dans un mandrin en bois ou en métal *ad hoc* M (fig. 1), destiné à maintenir les parois du cornet, pendant que l'on finit, au tour, l'intérieur, afin d'éviter qu'il 80 se déforme et se brise sous l'effort de l'outil. Malgré ces précautions on en perd beaucoup et il y a une grande dépense de bois perdu.

Ces difficultés m'ont engagé dans une autre voie, celle d'employer du bois de placage en 8 feuilles tranchées ou sciées. Les bois ainsi préparés m'ont permis d'établir des types d'études très pratiques à l'aide des modes et moyens de construction que j'ai combinés. Les bois que j'emploie sont le palissandre, l'acajou, l'acacia, 90 le tulipier à violon, guitare, mandoline, etc., le noyer, le hêtre. Ces bois peuvent être employés seuls ou mélangés, soit par contre-placage à fils croisés, soit par assemblage de lames. Les épaisseurs peuvent varier de un 95 demi-millimètre à cinq millimètres, exceptionnellement pour les grandes dimensions.

2° Cornets en bois de placage d'une seule pièce (fig. 2, 3, 4, 5, 6 et 7).

Si on veut un cornet d'une seule pièce, on 100 trace suivant le cône désiré une développante dudit cône (fig. 2 en réduction) pour en tirer un calibre ou gabarit en métal : zinc, cuivre,

etc., qui sert ensuite à tracer les feuilles de placage que l'on superpose en grand nombre, 25, 30 ou 50, suivant l'épaisseur, et que l'on découpe à la scie à ruban ou autre.

5 Les pièces ainsi découpées sont plongées dans l'eau bouillante ou mieux dans une étuve à vapeur très humide et à basse pression, 1 kilogramme et demi tout au plus, pendant une heure environ. Dans ce temps le bois est devenu extrêmement mou et souple. Vivement, alors, on saisit chaque pièce découpée et ramollic, B, que l'on enroule sur elle-même, dans le sens voulu, et on l'enfile sur un moule ou forme F, analogue aux formes à pains de 15 sucre, et sur cette feuille de bois B, on applique, de suite, une autre forme F pour maintenir B, jusqu'à complet refroidissement. On superpose ainsi un plus ou moins grand nombre de feuilles de bois ramolli et de formes, 20 à volonté. Les formes doivent être chauffées dans l'eau bouillante préalablement; elles sont en métal tourné sur les deux faces qui servent toutes deux. On les prend à la main par une traverse réservée ou rivée dans le métal (fig. 3 25 et 4). Lorsque tout est refroidi on démoule les pièces et on procède au collage latéral C, par recouvrement à l'aide d'une colle forte de bonne qualité. On maintient le collage soit à la presse, soit sous des formes analogues aux 30 formes F, mais en toile métallique pour laisser l'air circuler et faciliter le séchage. Ensuite, après séchage on fixe le cône creux en bois ainsi obtenu dans l'embouchure métallique E, soit de préférence par collage, soit par clouure 35 (fig. 5, 6 et 7, vues en bout et en coupe de l'embouchure). Enfin on polit la pièce et on la vernit à la gomme laque, à la manière des luthiers. Le vernis augmente la sonorité et préserve le bois. On a ainsi un cornet instrumental et non pas un simple cornet conducteur 40 du son.

3° Cornets en bois de placage en plusieurs pièces.

La figure 8 représente un cornet en bois, 45 de forme polygonale (octogone) qui est construit par lames B, clouées et collées, ou l'un ou l'autre, sur des baguettes de bois A (fig. 9 et 12, vue en bout) servant d'armature ou de carcasse. La pyramide tronquée ainsi 50 obtenue est ensuite collée en C dans une embouchure E en métal quelconque. On termine ensuite l'objet, comme il a été dit plus haut.

En place d'armatures en bois on peut faire usage d'armatures métalliques A (fig. 10, 11 et 13) pour recevoir et maintenir les feuilles 55 ou lames de bois B. Ces armatures peuvent être à l'intérieur ou à l'extérieur du cornet, lequel peut varier de formes, depuis la forme circulaire (cône) jusqu'au carré en passant par toutes les formes pyramidales à côtés mul- 60 tiples.

Les figures 14, 15 et 16 représentent un cornet, tronconique, à courbure en pavillon avec armature métallique. Une couronne repliée A forme l'armature du pavillon dans 65 laquelle s'engagent les lames de bois B; l'embouchure E porte une enveloppe isolée concentrique, mais soudée à sa base. Dans l'espace réservé entre les parois doubles ainsi formées (fig. 16), on engage et on colle le sommet du 70 cône en bois B, la base étant fixée dans la couronne de pavillon. Pour maintenir la courbure, on peut engager à l'extérieur un anneau métallique ou autre, O, relié à l'embouchure E par des tiges T soudées, collées ou rivées, en S 75 et en O. Les feuilles de placage ainsi maintenues peuvent affecter les formes désirées, en faisant varier la forme des carcasses et armatures et le tracé des lames de bois. Les joints, si besoin en est, sont fermés avec des bandes 80 de placage extrêmement minces et collées.

4° Cornets en bois combinés.

Pour obtenir une concordance des sons plus complète par synchronisme et isochronisme, on peut composer avantageusement les cornets, 85 de lames de bois d'essences diverses et même y ajouter une ou deux lames de métal et même de verre, de manière que lorsque l'on enregistrerait un morceau d'orchestre, tous les instruments trouvaient leurs harmoniques et 90 que le cornet puisse vibrer à l'unisson. Si, par exemple, le cornet est une pyramide duodécagonale, soit à 12 lames, on pourrait mettre en opposition :

- 2 lames en palissandre; 95
- 2 lames de métal qui peuvent être composées de bandes de métaux divers;
- 2 lames de verre;
- 2 lames de tulipier;
- 2 lames d'acajou rouge; 100
- 2 lames de noyer.

On obtiendrait ainsi un cornet orchestral idéal.

Pour la voix et le chant, le violon, les instruments de bois; il ne faut mettre que du bois, mais varier les espèces, ce que permet la forme polygonale de mes cornets.

- 5 On conçoit, en effet, que tous les bois ne vibrent pas également. Ainsi le noyer et le hêtre rendent très bien les sons graves; le tulipier et les bois blancs, les médiums, et l'acajou et le palissandre les notes élevées. Ces
10 différents bois se soutiennent entre eux et renforcent les sons en vibrant à l'unisson de leurs harmoniques comme les cordes d'un piano ou d'une harpe.

- 15 Tels sont les perfectionnements et procédés que j'entends breveter par les présentes.

REVENDECATIONS.

En conséquence, je revendique pour une période de quinze années :

- 20 1° L'application industrielle des bois divers à la confection spéciale des cornets pour phonographes, en conséquence des principes, études et observations et avantages particuliers que j'ai fait connaître ci-dessus et dans le but spécifié.

Notamment, la conservation du timbre de la voix ou de l'instrument;

2° Les moyens de construction desdits cornets, à l'aide du tour et mandrins, comme ci-dessus décrit et dans le but spécifié;

3° Les procédés de construction et façonnement de cornets d'une seule pièce à l'aide de bois de placage ramolli à la vapeur d'eau et de moulage et appareils et lesdits appareils, comme ci-dessus décrit et dans le but spécifié;

4° Les procédés de confection desdits cornets à l'aide de bois de placage débités en lames et fixées sur des armatures en bois ou en métal quelconque, internes ou externes, quelles qu'en soient les formes et dimensions, comme ci-dessus décrit et dans le but spécifié;

5° Les procédés de construction et de combinaison des cornets combinés, ces cornets eux-mêmes, à plusieurs bois différents, avec ou sans verre ou métaux à vibrations, comme ci-dessus décrit et dans le but spécifié.

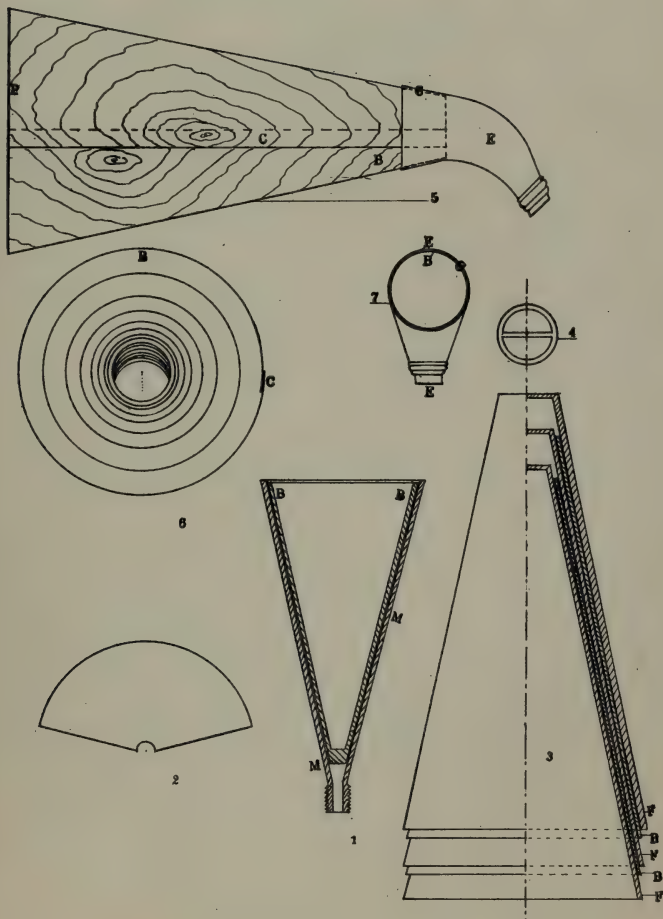
Février 1902.

Eug. TURPIN.

N° 318742

M. Turpin

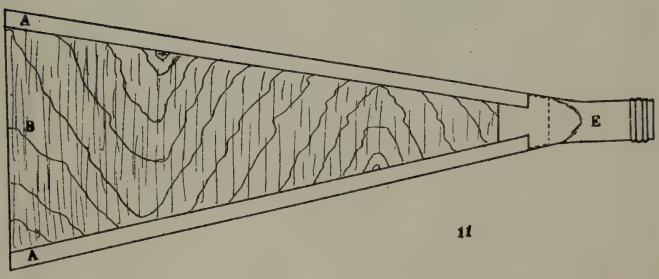
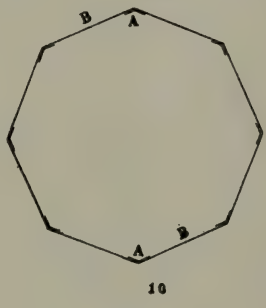
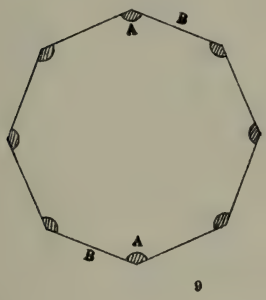
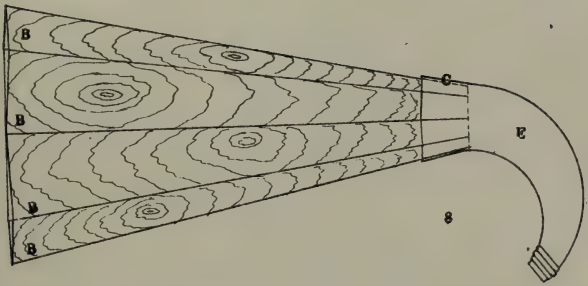
3 planchas. — Pl. I



N° 318742

M. Turpin

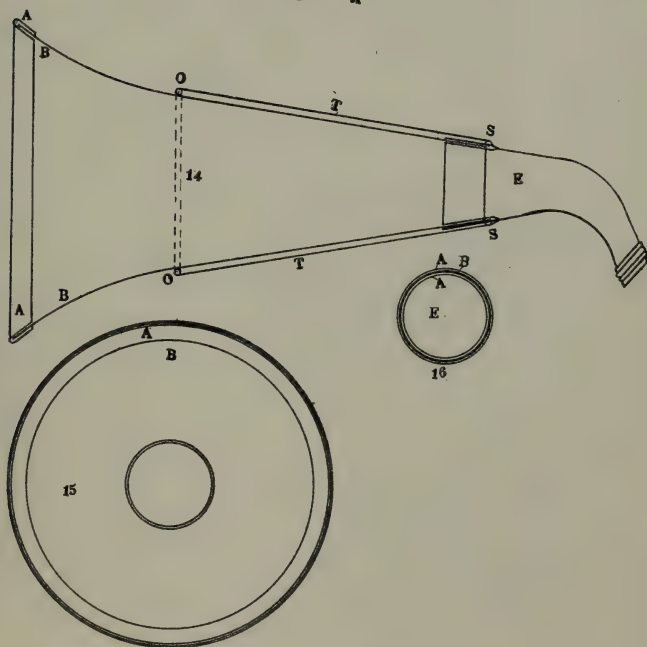
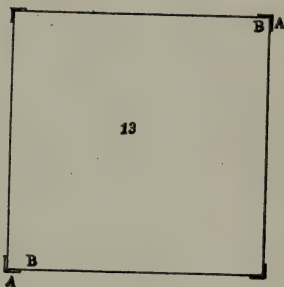
3 planches. — Pl. II



N° 318742

M. Tarpin

3 planches. — Pl. III



FRENCH REPUBLIC.

NATIONAL OFFICE OF INDUSTRIAL PROPERTY.

PATENT OF INVENTION

of February 17, 1902.

XII.—Instruments of Precision. No. 318,742

2.—Physical and chemical apparatus.

Patent applied for February 17, 1902 by M. TURPIN for a design for a horn of wood for a phonograph. (Delivered July 4, 1902; published October 25, 1902.)

PRINCIPLE.

Heretofore horns for phonographs serving either for recording or for reproduction have been of four kinds:

- 1st. Of pasteboard;
- 2nd. Of celluloid;
- 3d. Of glass or of crystal;
- 4th. Of metal; copper, tin, nickel, aluminum, german silver, etc.

Pasteboard, celluloid or fibre give only very bad vibrations. Crystal has not been successful because the vibrations are too sharp, and the horns are too heavy and too fragile.

Horns of metal are, in short, the only ones employed.

These horns give, whatever one may do, metallic, nasal sounds which take away all interest which the phonograph might have in itself, for it is impossible to recognize the recorded sounds, because the sounds are unnatural. It is thus that the violin cannot be

suitably reproduced by a phonograph; that the high notes of a good light singer are unnatural and accompanied by a metallic hissing which disturbs the ensemble that orchestral pieces are confused, etc.

All these disadvantages which absolutely harm the phonograph and which have prevented the phonograph, which is remarkable from more than one point of view, from acquiring the serious and scientific character which it ought to have, are due to the metallic nature of the horns which transform into a metallic sound a sound the most pure, first in the recording and then in the reproduction, whence finally into a sound of mockery for all tones and for all sounds.

As a consequence of this state of things, the phonograph remains a simple and often disagreeable toy, instead of being an apparatus faithfully reproducing sounds such as it may have received, that is to say a perfect instrument permitting easy recognition of the recorded sounds.

In searching for the causes of this serious and disturbing defectiveness, I have been surprised from the beginning of my researches, that one may try in vain, to cause a magnificent voice of a singer or tenor to pass to a hunting horn or in a trumpet first for the recording and then for the reproducing of the pieces of song. The effect obtained, in a manner continued and without change, that is to say without having remedied it since the invention of the phonograph can have nothing of surprise if one studies the subject scientifically.

It is very evident that a solo of a violin, of a violon-

cello, of an oboe or of the human voice, being emitted into a trumpet and reproduced by the aid of a metallic trumpet, will be completely lost and rendered unnatural by the discord of the vibrations and want of harmony which result from the asynchronous vibrations which are produced.

This fact being established by my experiences, I have sought how one could obviate these defects, and after having tried different plans I have observed that wood suitably worked and selected can remedy the defectiveness of the present phonographs and render these instruments perfect. Wood, indeed, gives vibrations so natural that it accords with all instruments and above all with the human voice which it permits to be recorded and to be reproduced with a softness, a clearness and an extreme fidelity and the most delicate shades. One knows, indeed, that instruments of wood, whether string instruments or wind instruments, are those which approach the most to the human voice. Such are the violin, the violoncello, the oboe, etc. Wood is then of all materials that which conforms the best to the composition of a phonographic horn, as I have observed.

In addition, I would remark here, and it is very important, from the point of view of the principle, that in the phonograph industry one does not pretend to attempt to obtain sounds pure and melodious, but only much noise. Noise, that is what all horns of tin, of aluminum, etc., aim at. One is concerned with their form, as a trumpet or hunting horn, only with a view of obtaining more force. Only in proportion

as the noise increases do the nasal and metallic sounds also increase and to such a point that in an orchestral piece one distinguishes only the large instruments of copper while all the delicate instruments, violins, harps, violoncellos, oboes, etc., are confused in a hissing that is disagreeable and comparable to a machine that catches, to such a point that one thinks, when the ear is not accustomed to it, that it is the mechanism of the phonograph which is the cause of it.

An apparatus, even very ordinary, provided with a horn of wood of my design, gives a recording and a reproduction very superior to those obtained with metallic horns.

The sounds emitted by instruments of copper, instead of being elevated as with a metallic horn, are rendered faithfully, rather a little softened, permitting the song to dominate.

Such are the principles, studies and observations which have led me to apply wood in the following manner to the phonograph industry.

PROCESS OF CONSTRUCTION.

In order that horns of wood may give satisfaction it is necessary that they be of wood very thin and very dry, suitably selected and worked. The suitable forms as well as the lightness of the apparatus present great difficulties which I have resolved in the following manner;

1st. Horns turned in wood.

This kind of horns, the first which presents itself to the mind is very difficult to obtain because of the large dimensions and of the small thickness which

it is necessary to attain. Besides all woods do not permit of obtaining the result. Mahogany, rosewood, acacia and walnut are dear, one finds them difficult in large blocks and they are fragile. White wood disintegrates, the beech or the tulip of America gives the best results.

In order to obtain a turned horn, one begins by turning the exterior of the block of wood to the form desired, then one fashions the interior following the exterior outline desired. Then one fixes the piece B, thus prepared on the exterior and fashioned on the interior, in a mandrel M (fig. 1) of wood or of metal for this purpose, intended to maintain the walls of the horn while one finishes it in turn on the interior, in order to avoid deformation and breaking under the effort of the tools. Notwithstanding these precautions one loses many of them and there is a great expense for wood lost.

These difficulties engaged me in another way, that of employing wood for veneering cut or sawed into sheets. Woods thus prepared have permitted me to construct types for study very practical by the aid of methods and means of construction which I have combined. The woods which I employ are rosewood, mahogany, acacia, tulip used for the violin, guitar, mandolin, etc., walnut and beech. These woods can be employed alone or mixed either by counter-veneering in cross order or by the assemblage of strips. The thickness may vary from a one-half mm. to 5mm. used exceptionally for large dimensions.

2nd. Horns of wood for veneering in a single piece (fig. 2, 3, 4, 5, 6, and 7).

If one wishes a horn of one piece, one spreads out according to the cone desired, an unfolded pattern of the cone (fig. 2 on a small scale) in order to obtain therefrom a caliber or model in metal, zinc, copper, etc., which then serves for outlining the sheets for veneering which one superimposes in great number, 25, 30 or 50, according to the thickness, and which one cuts out with a ribbon or other saw.

The pieces thus cut out are immersed in boiling water or rather in a steam-oven very humid and of low pressure, one kilogram and a half in all at the most, for about an hour. During this time the wood becomes extremely soft and supple. Quickly then one takes each cut and softened piece, B, which one folds upon itself, in the manner desired, and one places it on a mold or form F similar to forms for sugar-bread, and upon this sheet of wood B one applies then another form F in order to maintain B until complete cooling. One super-imposes thus a more or less large number of sheets of softened wood and of forms as desired. The forms should be heated in boiling water, preferably; they are of metal turned upon the two faces both of which are used. One takes them in the hand by a cross piece left or riveted in the metal (fig. 3 and 4). When all is cold one takes the pieces from the molds and proceeds to the lateral joint C securing it by means of a strong glue of good quality. One maintains the joint either by pressure or under forms similar to forms F, but of metal cloth in order to let the air circulate and to facilitate the drying. Then after the drying one secures the hollow cone of wood thus obtained in the

metallic mouth-piece E, either preferably by gluing or by nailing (fig. 5, 6 and 7, end and fore-shortened views of the mouth-piece). Finally one polishes the piece and varnishes it with a shellac, in the manner employed by instrument makers. The varnish increases the sonorousness and preserves the wood. One has then an instrumental horn and not a simple horn, that is a conductor of sound.

3rd. Horns of wood for veneering in several pieces.

Figure 8 represents a horn of wood, of polygonal form (octagonal) which is constructed of strips B, nailed and glued, or one or the other, upon ribs of wood A (figs. 9 and 12, end views) serving as bracers or as a skeleton. The truncated pyramid thus obtained is then glued at C in a mouth-piece E of any metal. One then finishes the matter in the manner which has been set forth above.

In place of ribs of wood one can make use of metallic ribs (figs. 10, 11 and 13) to receive and maintain the sheets or strips of wood B. These ribs may be on the interior or on the exterior of the horn, which may vary in form, from the circular form (cone) to that of a square, passing through all the pyramidal forms having a plurality of sides.

Figures 14, 15 and 16 show a truncated bell-shaped horn, with metallic bracing. A folded ring A forms the bracing of the bell in which the strips of wood B are engaged; the mouth-piece E carries a concentric envelope, detached but soldered at its base. In the space reserved between the double walls thus formed (fig. 16), the top of the cone of wood B is engaged and glued, the base being secured in the bell ring.

To maintain the curvature, one may secure to the exterior a metallic or other ring O, connected to the mouthpiece E by rods T, soldered, glued or riveted at S and at O. The sheets of veneering, thus maintained, can effect the forms desired, by varying the form of the skeleton and ribs and shape of the sheets of wood. The joints, if there is need of it, are secured by bands of veneering wood very thin and glued.

4th. Horns of woods combined.

In order to obtain a more complete concordance of the sounds by synchronism or isochronism, one may advantageously construct the horns of strips of wood of different kinds and also add thereto one or two strips of metal and also of glass, so that when one records an orchestral piece, all the instruments find their harmonics and that the horn can vibrate in unison. If, for example, the horn is a duo-decagonal pyramid, that is with 12 strips, one may put in opposition:

2 strips of rosewood;

2 strips of metal which may be composed of bands of different metals;

2 strips of glass;

2 strips of tulip;

2 strips of red mahogany;

2 strips of walnut.

One obtains thus an ideal orchestral horn.

For the voice and the song, the violin, the instruments of wood, it is necessary not only to employ wood, but to vary the kinds, which the polygonal form of my horns permits.

One understands, indeed, that all the woods do not vibrate equally. Thus the walnut and the beech render very well the grave sounds; the tulip and the white woods, the medium, and the mahogany and the rosewood the high notes. These different woods keep up among them and reinforce the sounds in vibrating in unison with their harmonics like the strings of a piano or of a harp.

Such are the results and methods which I intend to patent by these presents.

CLAIMS.

Therefore, I claim for a period of fifteen years;

1st. The industrial application of different woods to the special construction of horns for phonographs, according to the principles, studies and observations and particular advantages which I have set forth above and finally specified.

Especially the conservation of the quality of the voice and of the instrument.

2nd. The means of construction of said terms, by the use of a turning lathe and mandrels, as above described and finally specified.

3rd. The methods of construction and fashioning of horns in a single piece by the use of wood for veneering softened by steam and of molding and bracing and said apparatus, as above described and finally specified.

4th. The methods of construction of said horns by the use of wood for veneering cut into strips and secured upon ribs of wood or of any metal, internally or externally whatever may be their forms

and dimensions, as described above and finally specified.

5th. The methods of construction and the combination of combined horns, those horns of several different woods, with or without vibrating glass or metals, as above described and finally specified.

February, 1902.

EUG. TURPIN.

BREVET D'INVENTION

du 28 mai 1902.

XII. — Instruments de précision.

2. — APPAREILS DE PHYSIQUE ET DE CHIMIE.

N° 321.507

Brevet de quinze ans demandé le 28 mai 1902 par **M. RUNGE** (Walter C.), pour perfectionnements dans les cornets de graphophones ou machines parlantes. (Délivré le 12 septembre 1902; publié le 12 janvier 1903.)

Cette invention concerne les cornets de graphophones ou machines parlantes et a pour objet principal la fabrication d'un cornet qui ait des qualités de sonorité perfectionnée:

5 L'invention comprend aussi des supports perfectionnés pour le cornet, de telle sorte qu'en marche le style ou la pointe soit pressé avec une légère pression élastique sur la surface enregistreuse, et puisse, quand il est
10 nécessaire, être facilement mis hors de contact avec elle sans risquer d'endommager ladite surface.

Dans le dessin annexé, qui représente un graphophone et une forme d'exécution de
15 cornets et de supports de cornet suivant cette invention.

La figure 1 est une vue perspective avec une partie du cornet arrachée pour montrer sa forme en coupe transversale, et

20 La figure 2 montre également en perspective la plus petite extrémité du cornet dans la position qu'elle occupe quand elle n'est pas en fonction.

En se reportant d'abord à la figure 1,
25 A est un socle creux adapté pour recevoir un moteur destiné à actionner l'instrument, lequel peut être fixé sur le dessous d'une platine B et consiste de préférence en un mouvement d'horlogerie actionné par un ressort qui peut
30 se remonter par la clef C, le mécanisme étant mis en marche et arrêté au moyen d'une tête moletée B'. Les détails du moteur ne font pas

partie de la présente invention et par conséquent ne sont pas décrits.

Le cylindre enregistreur D montré en lignes 35 ponctuées dans la figure 1 est monté sur un mandrin D' qui peut tourner autour d'une tige D² maintenue dans le montant D³ fixé à la platine B. Ce mandrin est actionné par une courroie croisée E au moyen d'une poulie F 40 fixée à un axe F' s'élevant à travers la platine ou embase B et venant du moteur. Le cornet G est fait d'une feuille de matière flexible telle que du celluloid, ses bords étant assemblés par une pince métallique G' qui forme un 45 renfort longitudinal le long d'un côté de cette feuille et est fixé par la petite extrémité à une bande G² entourant le cornet et portant une pointe ou style G³ dans une douille G⁴. Un autre renfort est disposé de préférence à l'ex- 50 trémité opposée du cornet et ce second renfort affecte de préférence la forme d'un pli G⁵ qui, tout en renforçant le cornet, lui donne une forme en section transversale à peu près semblable à celle montrée dans la figure. 55

Afin que le cornet perfectionné puisse s'employer avec un pavillon évasé de la forme ordinaire, ce pli ne se prolonge pas, de préférence, jusqu'à l'extrémité large du cornet qui s'ajuste ainsi facilement dans le pavillon 60 évasé G⁶.

Le second renfort, au lieu d'être en forme de pli, peut affecter la forme d'une pince ou bande métallique fixée sur l'extérieur ou l'inté-

rieur du cornet et on peut employer plus de deux renforts.

Le cornet G est monté à pivot à sa plus large extrémité par une tige courbe H qui s'ajuste dans une douille H' sur le socle A , sa position précise étant déterminée par des fentes H^2 dans la douille qui reçoivent des broches H^3 sur la tige H . Le cornet est muni d'une plaque J ayant deux pattes ou tenons courbés vers le bas J' dans lesquels est monté à pivot un axe J^2 . Cet axe porte une douille J^3 appropriée pour passer par-dessus et tourner facilement sur l'extrémité relevée de la tige H . Un ressort plat J^4 se trouve à la partie supérieure de la douille J^3 et est muni d'un tampon J^5 à son extrémité libre où il presse contre le pavillon évasé G^6 du cornet.

La forme du ressort J^4 est telle que, quand l'instrument est dans sa position de travail comme on le voit dans la figure 1, le ressort presse contre l'extrémité évasée G^6 et fait appuyer la pointe G^2 avec une légère pression élastique sur le cylindre enregistreur D . On trouve que ce dispositif donne de bons résultats en pratique parce qu'il obvie à la tendance qu'a la pointe à quitter les rainures quand l'instrument est ébranlé ou dérangé.

Une barre ou pontet pivotant K se trouve près du cylindre enregistreur D et sous la petite extrémité du cornet G . Ce pontet est de préférence fait en fil métallique léger courbé de façon à ce qu'il puisse tourner autour d'un autre fil métallique horizontal K' supporté par une tige K^2 qui s'ajuste dans une douille H^4 faisant partie de la douille H' . Normalement, cette barre ou pontet K est, comme il est montré dans la figure 1, abattue de manière à être hors de contact avec le cornet G , mais quand on veut mettre l'instrument hors d'action on le tourne pour l'amener à une position verticale comme on le voit dans la figure 2 et il soulève l'extrémité inférieure du cornet et la pointe ou style, en les écartant du cylindre enregistreur. On trouve que ce dispositif éleveur simple est, à l'usage, celui qui procure un moyen rapide et sûr de mettre la pointe verticalement hors de prise avec les rainures

sur le cylindre enregistreur. Si cette action est produite comme avec d'autres instruments, en soulevant le cornet à la main et en le mettant au repos, il y a danger de déplacer la pointe légèrement de côté le long du cylindre enregistreur en endommageant ainsi les rainures.

On doit comprendre que le cornet et les supports de cornet d'après cette invention peuvent s'employer de concert avec toute forme convenable quelconque de graphophones ou machines parlantes, et ne sont pas limités au genre particulier d'instrument décrit dans le présent mémoire à titre d'exemple.

EN RÉSUMÉ, ayant maintenant décrit en détail et fait connaître la nature de ladite invention et de quelle manière on doit la réaliser, je revendique :

1° Dans un graphophone ou machine parlante, un cornet ayant deux ou plusieurs renforts longitudinaux servant à perfectionner ses qualités de sonorité.

2° Dans un graphophone ou machine parlante, un cornet ayant une pince G' assemblant les bords de la feuille de matière dont le cornet est fabriqué et servant de renfort, et un autre renfort en forme de pli longitudinal G^2 dans le côté opposé du cornet.

3° Dans un graphophone ou machine parlante, la combinaison avec un cornet pivotant d'un support à ressort tel que J pour faire appuyer le style ou pointe avec une légère pression élastique dans les rainures du cylindre enregistreur.

4° Dans un graphophone ou machine parlante, la combinaison avec un cornet d'un dispositif éleveur tel que K , K' , en principe de la manière et pour la destination décrites.

5° Dans un graphophone ou machine parlante, la combinaison avec un cornet ayant deux ou plusieurs renforts longitudinaux d'un dispositif éleveur K , K' et l'un support à ressort en principe comme il a été décrit et représenté dans le dessin annexé.

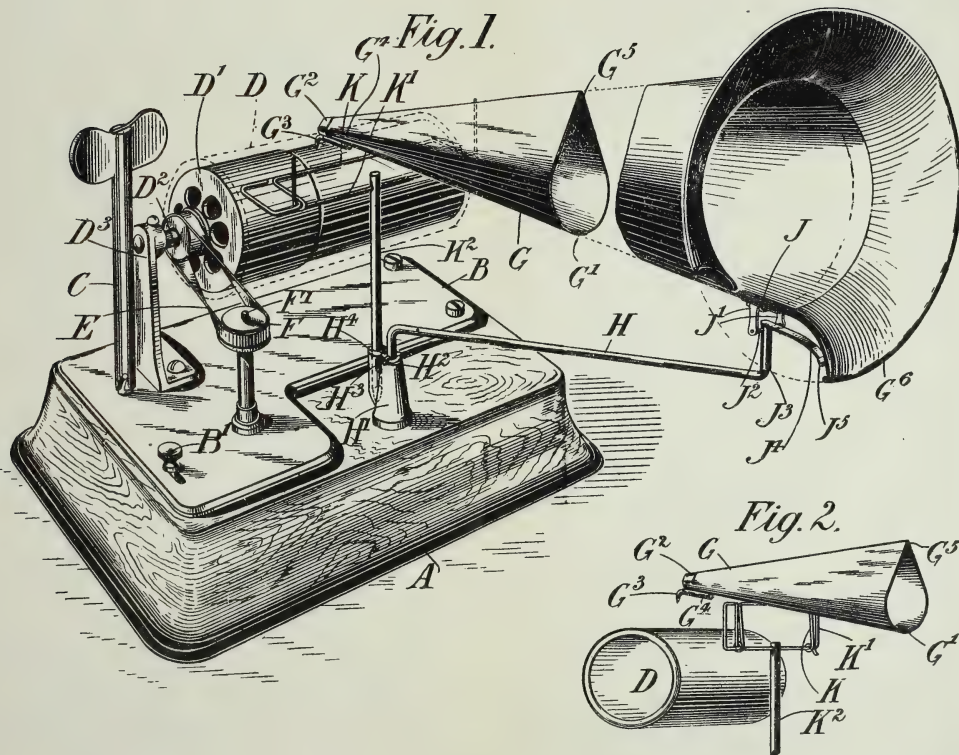
Paris, le 28 mai 1902.

Par procuration de M. W.-G. Rungö.
Ch. THIRION et J. BONNET.

N° 321.507

M. Runge

Pl. unique



FRENCH REPUBLIC.

NATIONAL OFFICE OF INDUSTRIAL
PROPERTY.

PATENT OF INVENTION.

Of May 28, 1902.

XII—Instruments of precision. No. 321,507.

2—Physical and chemical apparatus.

Patent for 15 years, applied for May 28, 1902, by
M. Runge (Walter C.), for improvements in
horns for graphophones or talking machines
(Delivered Sept. 12, 1902; published January
12, 1903).

This invention relates to horns for graphophones
or talking machines and has for its principal object
the manufacture of a horn which has improved
sound-producing qualities.

The invention comprises also improved supports
for the horn, of such kind that in operation the stylus
or point may be pressed with a light elastic pressure
upon the record surface, and then, when necessary,
be easily put out of contact with it without risk of
damaging said surface.

In the annexed drawing, which represents a
graphophone and one form of construction of horns
and of supports for horns according to this inven-
tion;—

Figure 1 is a perspective view with a part of the
horn removed in order to show its form in transverse
section, and

Figure 2 shows likewise, in perspective, the smaller
end of the horn in the position which it occupies when
it is not in use.

Referring first to figure 1, A is a hollow pedestal adapted to receive a motor designed to actuate the instrument, which can be secured upon the under surface of a platen B and consists, preferably, of a clock movement actuated by a spring which can be wound up by a key C, the mechanism being put in operation and stopped by means of a milled head B.' The details of the motor do not form part of the present invention and consequently are not described.

The cylinder for recording D shown in dotted lines in figure 1 is mounted upon a mandrel D' which turns about a shaft D² mounted in the standard D³ fixed to the platen B. This mandrel is actuated by a twisted leather strap E by means of a pulley F secured to an axel F' rising through the platen or base B and proceeding from the motor. The horn G is made of flexible sheet material such as celluloid its edges being joined together by a metallic clip G' which forms a longitudinal reinforcement along the side of this sheet and is connected at the smaller end to a band G² surrounding the horn and carrying a point or stylus G³ in a socket G⁴. Another reinforcement is placed preferably at the opposite side of the horn and this second reinforcement takes preferably the form of a crease G⁵ which, while reinforcing the horn, gives to it a form in cross-section about like that shown in the drawing.

In order that the improved horn may be employed with a flaring bell of the ordinary form, this crease is not prolonged, preferably, to the large end of the horn, which thus fits easily in the flaring bell G⁶.

The second reinforcement, instead of being in the form of a crease can take the form of a clip or metal strip fixed upon the exterior or the interior of the horn and one can employ more than two reinforcements.

The horn G is pivotally mounted at its larger end by a curved rod H which fits into a socket H' upon the pedestal A, its precise position being determined by perforations H² in the socket, which receive pins H³ upon the rod H. The horn is provided with a metal piece J having two downwardly curved hands or ends J' in which is pivotally mounted an axis J². This axis carries a socket J³ adapted to receive and turn easily upon the upwardly extending extremity of the rod H. A flat spring J⁴ is secured to the upper part of the socket J³ and is provided with a pad J⁵ at its free end where it presses against the flaring bell G⁶ of the horn.

The form of the spring J⁴ is such that when the instrument is in its position of operation, as one sees it in figure 1, the spring presses against the flaring end G⁶ and causes the point G³ to bear with a light elastic pressure upon the recording cylinder D. One finds that this disposition gives good results in practice because it obviates the tendency which the point has of leaving the grooves when the instrument is shaken or disturbed.

A pivoted bar or bridge K is placed near the recording cylinder D and under the small end of the horn G. This bridge is preferably made of light metal wire curved in such manner that it can be turned about another horizontal metal wire K' sup-

ported by a rod K^2 which is adjusted in a socket H^4 forming part of the socket H' . Normally, this bar or bridge K is, as shown in figure 1, lowered so as to be out of contact with the horn G , but when one wishes to put the instrument out of action one turns it in order to bring it to a vertical position as seen in figure 2 and it raises the lower end of the horn and the point or stylus, separating them from the recording cylinder. One finds that this simple lifting adjustment is, in practice, one that secures a rapid and sure means of raising the point out of contact with the grooves of the recording cylinder. If this action is produced as with other instruments, in raising the horn by the hand and in putting it at rest, there is danger of moving the point lightly to the side along the recording cylinder thus damaging its grooves.

One should understand that the horn and the supports for the horn, according to this invention, can be employed together with every suitable form of graphophones or talking machines, and are not limited to the particular kind of instrument described in the present memorandum by way of example.

Summing up, having now described in detail and made known the nature of said invention and in what manner it is to be performed, I claim:

1st. In a graphophone or talking machine, a horn having two or more longitudinal reinforcements serving to improve its sound-producing qualities.

2nd. In a graphophone or talking machine, a horn having a slip G' joining together the edges of the sheet material of which the horn is made and serv-

ing as a reinforcement and another reinforcement in the form of a longitudinal crease G^5 at the opposite side of the horn.

3rd. In a graphophone or talking machine, the combination with a pivoted horn of a spring support such as J^4 to cause the stylus or point to bear with a light elastic pressure in the grooves of the recording cylinder.

4th. In a graphophone or talking machine, the combination with a horn of an elevating device such as K , K' , substantially in the manner and for the purpose described.

5th. In a graphophone or talking machine, the combination with a horn having two or more longitudinal reinforcements of an elevating device K , K' , and of a spring support J^4 substantially as described and shown in the annexed drawing.

Paris, May 28, 1902.

By power of attorney of
M. W. C. RUNGE,
CH. THIRION and
J. BONNET.

RÉPUBLIQUE FRANÇAISE.

OFFICE NATIONAL DE LA PROPRIÉTÉ INDUSTRIELLE.

BREVET D'INVENTION

du 28 avril 1903

XII. — Instruments de précision.

2. — APPAREILS DE PHYSIQUE ET DE CHIMIE.

N° 331.566

Brevet de quinze ans demandé le 28 avril 1903 par M. William Turner Pierce
HOLLINGSWORTH résidant en France.

Système de cornet pour phonographes et autres instruments analogues.

Delivré le 31 juillet 1903; publié le 19 septembre 1903.

Ce système de cornet est établi de façon à présenter deux parties à peu près planes, disposées sous un certain angle l'une par rapport à l'autre et unies par une partie 5 intermédiaire très flexible faisant pour ainsi dire fonction de charnière et s'étendant dans le sens de la longueur du cornet.

A l'exception de ces deux parties planes, le cornet est de section concavo-convexe et la 10 partie intermédiaire peut être rendue flexible non seulement en donnant au pli une assez grande ouverture, mais en perçant des ouvertures à des intervalles réguliers le long du pli formé. Il y a avantage, dans la plupart des 15 cas, sinon dans tous, à établir, en regard de la partie intermédiaire formant charnière, une zone longitudinale présentant une grande rigidité.

Dans le dessin ci-joint, la fig. 1, en perspective, représente un cornet établi suivant ce système.

La fig. 2 est une coupe suivant 2, 2 fig. 1.

La fig. 3 est une coupe suivant 3, 3 fig. 1.

La fig. 4 est une vue semblable à la fig. 1, 25 sauf qu'elle représente une variante.

La fig. 5 est une coupe suivant 5, 5 fig. 4.

Le cornet peut être en matière quelconque, mais on donnera la préférence au celluloid. Il est conique d'un bout à l'autre et son gros 30 bout peut être de section à peu près circulaire, fig. 2, celle-ci s'appliquant à la fois aux

deux dispositions des figures 1 et 4. Le petit bout peut, lui aussi, être de section ronde ou diamantiforme.

Il est établi avec deux parties planes, $a' a^2$, 35 qui, à leurs bords adjacents, sont réunies par une partie intermédiaire très flexible a^3 formant charnière. Cette dernière peut s'obtenir avantageusement en formant un large pli dans la matière dont se compose le cornet. Par 40 large pli, il faut entendre un pli qui donne le minimum de raideur et le maximum de flexibilité à cette partie du cornet dans laquelle le pli est formé et ce à l'effet de donner aux parties planes $a' a^2$ la plus grande faculté 45 possible de vibrer l'une par rapport à l'autre.

Une flexibilité suffisante peut s'obtenir par la disposition représentée aux figures 1, 2 et 3, pourvu que le pli soit suffisamment large et fléchissant. On peut aussi assurer la 50 flexibilité voulue en perçant des trous ou des ouvertures a^4 le long du sommet du pli, ainsi que le représentent les figures 4 et 5. Bien que ces ouvertures puissent avoir des formes différentes, il y a lieu d'estimer que la forme 55 la plus avantageuse est celle des figures 4 et 5, dans laquelle elles sont constituées par des fentes s'étendant dans le sens longitudinal du pli.

De la raideur en regard du pli a^3 est, de 60 l'avis de l'inventeur, avantageuse lorsqu'on se sert, pour la confection du cornet, d'une ma-

Prix du fascicule : 1 franc.

tière telle que le celluloïd. On peut obtenir cette raideur en assujettissant au cornet, en regard du pli a^2 , une bande de tôle a^5 , à chaque bord du celluloïd. Lorsqu'on fait usage
5 de ces bandes, on peut les utiliser comme moyen pour assembler les deux bords d'une plaque de matière que l'on courbe à la forme voulue pour établir le cornet. En tous les cas, on peut se servir d'un mastic convenable pour
10 fixer les bandes à la matière. Lorsqu'on se sert de celluloïd, l'une quelconque des colles ou compositions bien connues peuvent être employées pour le réunir au métal.

Au petit bout du cornet est fixé le style a^6 ,

le montage de celui-ci pouvant être effectué à 15 l'aide des bandes a^5 .

Les extrémités du cornet peuvent être garnies d'anneaux ou de garnitures métalliques servant à les protéger contre toute fracture accidentelle. 20

Un cornet de ce système peut être monté et manœuvré de n'importe quelle manière convenable pendant l'usage. Ce sont là des détails qui sont en dehors du cadre de la présente demande. 25

Par procuration de : HOLLINGSWORTH.

BRANDON frères.

Fig. 1.

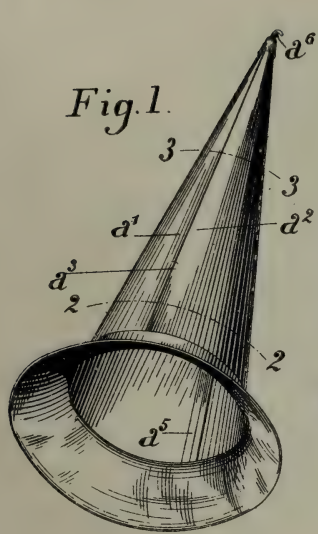


Fig. 4.

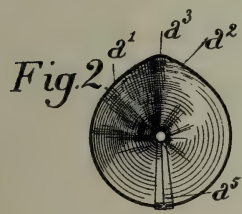
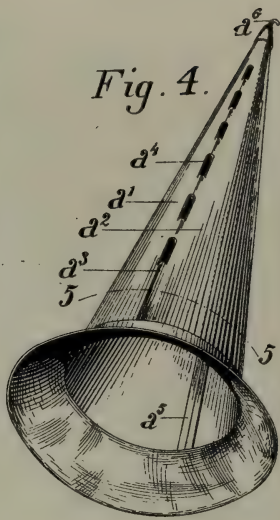


Fig. 5.

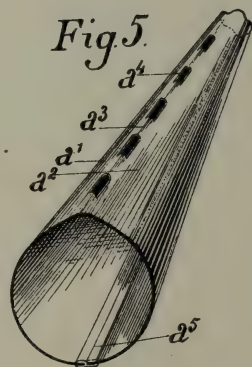


Fig. 3.



FRENCH REPUBLIC.

NATIONAL OFFICE OF INDUSTRIAL
PROPERTY.

PATENT OF INVENTION.

Of April 28, 1903.

XII—Instruments of precision. No. 331,566.

2—Physical and chemical apparatus.

Patent for 15 years, applied for April 28, 1903, by
M. William Turner Pierce Hollingsworth resid-
ing in France. Design of horn for phonographs
and other like instruments. Delivered July 31,
1903; published Sept. 19, 1903.

This design of horn is constructed in such a way
as to present two parts nearly flat, disposed at a cer-
tain angle with respect to each other and united by
a very flexible intermediate part performing, so to
speak, the function of a hinge and extending along
the length of the horn.

With the exception of these two flat parts, the horn
is in section concavo-convex and the intermediate
part can be rendered flexible not only by giving to
the crease a sufficiently large opening, but by mak-
ing openings at regular intervals along the crease.
It is advantageous, in most cases, but not in all, to
make, with respect to the intermediate part forming
the hinge, a longitudinal zone of great rigidity.

In the drawing hereto annexed, fig. 1 shows, in per-
spective, a horn constructed according to this design.

Fig. 2 is a section upon the line 2—2 of fig. 1.

Fig. 3 is a section upon the line 3—3 of fig. 1.

Fig. 4 is a view similar to fig. 1, except that it shows
a modification.

Fig. 5 is a section upon the line 5—5 of fig. 4.

The horn can be of any material, but preference will be given to celluloid. It is conical from one end to the other and its large end can be of a section nearly circular, fig. 2, the latter figure applying at the same time to the two arrangements of figures 1 and 4. The small end can also be of round or diamond section.

It is constructed with two flat parts, a' , a^2 , which at their adjacent edges, are united by a very flexible intermediate part a^3 , forming a hinge. This can be attained advantageously by forming a wide crease in the material of which the horn is composed. By a wide crease, is to be understood a crease which gives the minimum stiffness and the maximum of flexibility to that part of the horn in which the crease is formed and this has the effect of giving to the flat parts, a' a^2 the greatest possible capacity of vibrating in conformity with each other.

A sufficient flexibility can be obtained by the arrangement shown in figures 1, 2 and 3, provided that the crease be sufficiently wide and pliant. The desired flexibility can also be secured by making holes or openings a^4 along the top of the crease, as shown in figures 4 and 5. Although these openings can have different forms, there is reason to believe that the most advantageous form is that of figures 4 and 5, in which they consist of openings extending longitudinally along the crease.

With regard to the crease a^3 some stiffness is, in the opinion of the inventor, advantageous when one uses, for the making of the horn, a material such as

celluloid. One can obtain this stiffness by securing to the horn, with reference to the crease a^3 , a strip of metal a^5 at each edge of the celluloid. When use is made of these strips one can utilize them as means for joining together the two edges of a sheet of material which is bent to the form desired to construct the horn. In all cases, one can make use of a gum suitable for securing the strips to the material. When one uses celluloid any one of the well known glues or compositions *can employed* to unite it to the metal.

To the small end of the horn, the stylus a^6 is attached, the mounting of which can be effected by the aid of the strips a^5 .

The ends of the horn can be provided with rings or metallic fittings which serve to protect the ends against all accidental fracture.

A horn of this design can be mounted and manipulated in any suitable manner during use. These are details which are beyond the scope of the present application.

By power of attorney of
HOLLINGSWORTH,
BRANDON BROS.

6

